Genie®

Service Manual

Part No. 77832
Rev B1
January 2004

S™-80
S™-85

Important

Read, understand and obey the safety rules and operating instructions in the *Genie S-80* and *S-85 Operator's Manual* before attempting any maintenance or repair procedure.

This manual provides detailed scheduled maintenance information for the machine owner and user. It also provides troubleshooting fault codes and repair procedures for qualified service professionals.

Basic mechanical, hydraulic and electrical skills are required to perform most procedures. However, several procedures require specialized skills, tools, lifting equipment and a suitable workshop. In these instances, we strongly recommend that maintenance and repair be performed at an authorized Genie dealer service center.

Technical Publications

Genie Industries has endeavored to deliver the highest degree of accuracy possible. However, continuous improvement of our products is a Genie policy. Therefore, product specifications are subject to change without notice.

Readers are encouraged to notify Genie of errors and send in suggestions for improvement. All communications will be carefully considered for future printings of this and all other manuals.

Contact Us:

http://www.genieindustries.com
e-mail: techsup@genieind.com

Serial Number Information

Genie Industries offers the following Service Manuals for these models:

Title	Part No.
Genie S-80 and Genie S-85 Service Manual (from serial number 966 to 3081)	72062

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Safety Rules

Danger

Failure to obey the instructions and safety rules in this manual, and the *Genie S-80 and Genie S-85 Operator's Manual* will result in death or serious injury.

Many of the hazards identified in the operator's manual are also safety hazards when maintenance and repair procedures are performed.

Do Not Perform Maintenance Unless:

- ☑ You are trained and qualified to perform maintenance on this machine.
- ☑ You read, understand and obey:
  - manufacturer's instructions and safety rules
  - employer's safety rules and worksite regulations
  - applicable governmental regulations
- ☑ You have the appropriate tools, lifting equipment and a suitable workshop.

SAFETY RULES

Personal Safety

Any person working on or around a machine must be aware of all known safety hazards. Personal safety and the continued safe operation of the machine should be your top priority.

Read each procedure thoroughly. This manual and the decals on the machine use signal words to identify the following:

Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER Red—used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Orange—used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Yellow with safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION Yellow without safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE Green—used to indicate operation or maintenance information.

Workplace Safety

Be sure to wear protective eye wear and other protective clothing if the situation warrants it.

Be aware of potential crushing hazards such as moving parts, free swinging or unsecured components when lifting or placing loads. Always wear approved steel-toed shoes.

Be sure to keep sparks, flames and lighted tobacco away from flammable and combustible materials like battery gases and engine fuels. Always have an approved fire extinguisher within easy reach.

Be sure that all tools and working areas are properly maintained and ready for use. Keep work surfaces clean and free of debris that could get into machine components and cause damage.

Be sure any forklift, overhead crane or other lifting or supporting device is fully capable of supporting and stabilizing the weight to be lifted. Use only chains or straps that are in good condition and of ample capacity.

Be sure that fasteners intended for one time use (i.e., cotter pins and self-locking nuts) are not reused. These components may fail if they are used a second time.

Be sure to properly dispose of old oil or other fluids. Use an approved container. Please be environmentally safe.

Be sure that your workshop or work area is properly ventilated and well lit.

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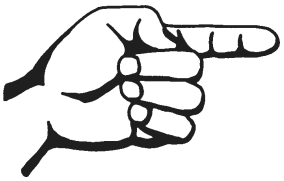

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Specifications

REV A

Machine Specifications

Stowed dimensions	S-80	S-85
Length	36 ft 8 in 11.2 m	40 ft 7 in 12.4 m
Width, axles retracted	7 ft 11 1/2 in 2.4 m	7 ft 11 1/2 in 2.4 m
Width, axles extended	10 ft 3 m	10 ft 3 m
Height	9 ft 2 in 2.8 m	9 ft 2 in 2.8 m
Ground clearance	11 in 27.9 cm	11 in 27.9 cm
Weight	33,380 lbs 15,141 kg	36,450 lbs 16,533 kg

Machine weights vary with option configurations.
See Serial Plate for weight of your machine.

Platform dimensions	6 ft (Standard)	8 ft (Optional)
Length	72 in 182.8 cm	96 in 243.8 cm
Width	30 in 76.2 cm	36 in 91.4 cm

Operational dimensions	S-80	S-85
Platform height, maximum	80 ft 24.4 m	85 ft 25.9 m
Horizontal reach, maximum	71 ft 11 in 21.9 m	76 ft 11 in 23.4 m
Turntable tailswing, maximum	3 ft 8 1/2 in 113 cm	3 ft 8 1/2 in 113 cm
Wheelbase	9 ft 2.7 m	9 ft 2.7 m
Turning radius, inside (axles extended)	10 ft 7 1/2 in 3.23 m	10 ft 7 1/2 in 3.23 m
Turning radius, outside (axles extended)	23 ft 1 in 7.03 m	23 ft 1 in 7.03 m
Turntable rotation	continuous	continuous
Platform rotation	160°	160°
Capacity, maximum 6 foot platform	600 lbs 272 kg	500 lbs 227 kg
Capacity, maximum 8 foot platform	500 lbs 227 kg	500 lbs 227 kg
Capacity, maximum (with foam filled tires and proper counterweight configuration)	750 lbs 340 kg	N/A N/A
Allowable side force, maximum (ANSI and CSA)	150 lbs 667 N	150 lbs 667 N
Allowable side force, maximum (CE)	90 lbs 400 N	90 lbs 400 N

Continuous improvement of our products is a Genie policy. Product specifications are subject to change without notice.

SPECIFICATIONS REV A

Tires and wheels	
Tire size	15-22.5 SAT 385/65-22.5
Tire ply rating	16
Overall tire diameter	43.5 in 110.5 cm
Tire pressure	100 psi 6.9 bar
Wheel diameter	22.5 in 57 cm
Wheel width	11.75 in 29.8 cm
Wheel lugs	10 @ 3/4 -16
Lug nut torque, dry	420 ft-lbs 569.4 Nm
Lug nut torque, lubricated	315 ft-lbs 427 Nm
Fluid capacities	
Fuel tank	33 gallons 124.9 liters
LPG tank	33.5 pounds 15.2 kg
Hydraulic tank	45 gallons 170 liters
Hydraulic system (including tank)	55 gallons 208 liters
Drive hubs	61 fl oz 1.8 liters
Turntable rotation drive hub	32 fl oz 0.95 liters

Performance Specifications

Drive speed, maximum	
Stowed position	3.3 mph 5.3 km/h 40 ft/8.2 sec 12.2 m/8.2 sec
Raised or extended position	0.68 mph 1.1 km/h 40 ft/43 sec 12.2 m/43 sec
Gradeability	
Stowed position	45%
Boom function speeds, maximum from platform controls	
Jib boom up (S-85)	60 to 70 seconds
Jib boom down (S-85)	40 to 50 seconds
Boom up	89 to 93 seconds
Boom down	90 to 94 seconds
Boom extend	73 to 79 seconds
Boom retract	79 to 84 seconds
Turntable rotate, 360° boom fully stowed	80 to 84 seconds
Turntable rotate, 360° boom raised or extended	210 to 240 seconds
Platform rotate, 160°	8 to 12 seconds
Platform level up	50 to 60 seconds
Platform level down	40 to 50 seconds

REV B SPECIFICATIONS

Hydraulic Specifications

Hydraulic oil specifications	
Before serial number 3349	
Hydraulic oil type	Shell Donax TG (Dexron III)
After serial number 3348	
Hydraulic oil type	Chevron Rykon MV equivalent
Approximate SAE grade	5W-20
Viscosity index rating	200

Chevron Rykon MV oil is fully compatible and mixable with Shell Donax TG (Dexron III) oils.

Genie specifications require hydraulic oils which are designed to give maximum protection to hydraulic systems, have the ability to perform over a wide temperature range, and have a minimum viscosity index rating of 150. They should provide excellent antiwear, oxidation, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.

Optional fluids	
Biodegradable	Petro Canada Premium ECO 46 Statoil Hydra Way Bio Pa 32 BP Biohyd SE-S
Fire resistant	UCON Hydrolube HP-5046 Quintolubric 822
Mineral based	Shell Tellus T32 Shell Tellus T46 Chevron Aviation A

NOTICE Genie specifications require additional equipment and special installation instructions for the approved optional fluids. Consult the Genie Industries Service Department before use.

Drive pump	
Type: bi-directional variable displacement piston pump	
Flow rate @ 2300 rpm	30.3 gpm 114.7 L/min
Drive pressure, maximum	4200 psi 290 bar

Charge pump	
Type:	gerotor
Displacement	0.85 cu in 13.9 cc
Flow rate @ 2300 rpm	8 gpm 30.3 L/min
Charge pressure @ 2300 rpm Neutral position	320 psi 22 bar

Function pump	
Type:	two-section tandem gear pump
Displacement - Pump 1 (inner)	1.4 cu in 22.9 cc
Flow rate @ 2300 rpm	12.7 gpm 48 L/min
Displacement - Pump 2 (outer)	0.24 cu in 4 cc
Flow rate @ 2300 rpm	2.25 gpm 8.5 L/min

Auxiliary pump	
Type:	fixed displacement gear pump
Displacement - static	0.151 cu in 2.47 cc

SPECIFICATIONS REV B

Function manifold	
Function relief pressure (measured at PTEST port)	2900 psi 200 bar
Boom down relief pressure (measured at PTEST port)	2100 psi 145 bar
Boom extend (measured at PTEST port)	2500 psi 172 bar
Steer/axle extend flow regulator	3.5 gpm 13.2 L/min
Oscillate relief pressure	950 psi 65.5 bar
Drive manifold	
Hot oil relief pressure	280 psi 19.3 bar
Brakes	
Brake release pressure	215 psi 14.8 bar
Drive motors	
Displacement per revolution, variable (2 speed motor)	0.9 to 2.7 cu in 14.7 to 45 cc
Hydraulic filters	
High pressure filter	Beta $_3 \geq 200$
High pressure filter bypass pressure	102 psi 7 bar
Medium pressure filter	Beta $_3 \geq 200$
Medium pressure filter bypass pressure	51 psi 3.5 bar
Hydraulic tank circuit return line filter	10 micron with 25 psi / 1.7 bar bypass

REV A SPECIFICATIONS

GM 3.0L EFI Engine

Displacement	181 cu in 3 liters
Number of cylinders	4
Bore & stroke	4 x 3.6 inches 101.6 x 91.44 mm
Horsepower	
Intermittent	67 @ 2300 rpm
Continuous	60 @ 2300 rpm
Firing order	1 - 3 - 4 - 2
Low idle	1650 rpm
High idle	2300 rpm
Compression ratio	9.25:1
Compression pressure - minimum Pressure (psi or bar) of lowest cylinder must be at least 75% of highest cylinder	100 psi 6.9 bar
Valve clearances	Zero lash + 1 full turn
Lubrication system	
Oil pressure - minimum (operating temp. @ 2000 rpm)	18 psi 1.24 bar
Oil capacity (including filter)	5 quarts 4.7 liters
Oil viscosity requirements	
Below 0°F / -17.8°C	5W-30
Above 0°F / -17.8°C	10W-30

Only use engine oils labeled "**For Gasoline Engines**" by the American Petroleum Institute (API).

Starter motor	
Normal engine cranking speed	350 rpm
Current draw, normal load	400A
Current draw, maximum load	600A
Current draw, minimum	100A
Batteries	
Type	12V DC
Size	13 x $6^{13}/_{16}$ x $9^{3}/_{8}$ inches 33 x 17.3 x 23.8 cm
Quantity	2
Cold cranking ampere	1000A
Reserve capacity @ 25A rate	200 minutes
Electronic fuel pump	
Fuel pressure, static	9 to 11 psi 0.6 to 0.76 bar
Fuel flow rate	0.3 gpm 1.14 L/min
Ignition system	
Spark plug type	AC ACMR-43-LTS
Spark plug gap	0.040 inches 1.01 mm
Engine coolant	
Capacity	12 quarts 11.4 liters
Alternator	
Output	66A, 12V DC
Fan belt deflection	$^{1}/_{2}$ inch 12 mm

SPECIFICATIONS REV B

Deutz F4L 913 Engine

Displacement	249.3 cu in 4.085 liters
Number of cylinders	4
Bore and stroke	4.02 x 4.92 inches 102.1 x 125 mm
Horsepower	76 @ 2300 rpm
Firing order	1 - 3 - 4 - 2
Compression ratio	18:1
Compression pressure Pressure (psi or bar) of the lowest cylinder must be at least 75% of the highest cylinder.	
Low idle - no load	1300 rpm
High idle - no load	2300 rpm
Valve clearance, cold	
Intake	0.006 in 0.15 mm
Exhaust	0.006 in 0.15 mm
Lubrication system	
Oil pressure	40 to 60 psi 2.75 to 4.14 bar
Oil capacity (including filter)	14.3 quarts 13.5 liters
Oil viscosity requirements	
Below 77°F / 25°C	5W-30 (synthetic)
-13° F to 86°F / -25° C to 30°C	10W-40
Above -4°F / -20°C	15W-40
Engine oil should have properties of API classification CD grade OR ACEA classification E1-96.	

Injection system	
Injection pump make	IMSA
Injection pump pressure	8702 psi 600 bar
Injector opening pressure	3626 psi 250 bar
Fuel requirement	diesel number 2-D
Alternator output	55A, 12V DC
Batteries	
Type	12V DC
Size	13 x $6^{13}/_{16}$ x $9^{3}/_{8}$ inches 33 x 17.3 x 23.8 cm
Quantity	2
Cold cranking ampere	1000A
Reserve capacity @ 25A rate	200 minutes
Fan belt deflection	$^{3}/_{8}$ to $^{1}/_{2}$ inch 9 to 12 mm

REV B SPECIFICATIONS

Perkins 704-30 Engine

Displacement	183 cu in 3 liters
Number of cylinders	4
Bore and stroke	3.82 x 3.94 inches 97 x 100 mm
Horsepower	61 @ 2300 rpm
Firing order	1 - 3 - 4 - 2
Compression ratio	17.5:1
Compression pressure	300 to 500 psi 20.7 to 34.5 bar
Pressure (psi or bar) of lowest cylinder must be within 50 psi / 3.45 bar of highest cylinder	
Low idle	1600 rpm
High idle	2300 rpm
Governor	centrifugal mechanical
Valve clearance, cold	
Intake	0.014 in 0.35 mm
Exhaust	0.014 in 0.35 mm
Lubrication system	
Oil pressure (at 2300 rpm)	41 psi 2.8 bar
Oil capacity (including filter)	7.4 quarts 7 liters
Oil viscosity requirements	
-13°F to 68° F / -25° C to 20°C	5W-20
5°F to 104°F / -15°C to 40°C	10W-30
Above 14°F / -10°C	15W-40
Engine oil should have properties of API classification CC/SE.	

Injection system	
Injection pump make	Zexel PFR-KX
Injection pump pressure	2755 psi 190 bar
Injector opening pressure	3626 psi 250 bar
Fuel requirement	diesel number 2-D
Engine coolant	
Capacity	11 1/2 quarts 10.9 liters
Alternator output	65A, 12V DC
Batteries	
Type	12V DC
Size	13 x 6 13/16 x 9 3/8 inches 33 x 17.3 x 23.8 cm
Quantity	2
Cold cranking ampere	1000A
Reserve capacity @ 25A rate	200 minutes
Fan belt deflection	3/8 in 10 mm

SPECIFICATIONS REV A

Hydraulic Hose and Fitting Torque Specifications

Your machine is equipped with Parker Seal-Lok® fittings and hose ends. Genie specifications require that fittings and hose ends be torqued to specification when they are removed and installed or when new hoses or fittings are installed.

SAE O-ring Boss Port
(tube fitting - installed into Aluminum)

SAE Dash size	Torque
-4	11 ft-lbs / 14.9 Nm
-6	23 ft-lbs / 31.2 Nm
-8	40 ft-lbs / 54.2 Nm
-10	69 ft-lbs / 93.6 Nm
-12	93 ft-lbs / 126.1 Nm
-16	139 ft-lbs / 188.5 Nm
-20	172 ft-lbs / 233.2 Nm
-24	208 ft-lbs / 282 Nm

Seal-Lok® fittings

1 Replace the O-ring. The O-ring must be replaced anytime the seal has been broken. The O-ring cannot be re-used if the fitting or hose end has been tightened beyond finger tight.

NOTICE The O-rings used in the Parker Seal Lok® fittings and hose ends are custom-size O-rings. They are not standard SAE size O-rings. They are available in the O-ring field service kit (Genie part number 49612).

2 Lubricate the O-ring before installation.

3 Be sure that the face seal O-ring is seated and retained properly.

4 Position the tube and nut squarely on the face seal end of the fitting and tighten the nut finger tight.

5 Tighten the nut or fitting to the appropriate torque per given size as shown in the table.

6 Operate all machine functions and inspect the hoses and fittings and related components to confirm that there are no leaks.

SAE O-ring Boss Port
(tube fitting - installed into Steel)

SAE Dash size	Torque
-4	16 ft-lbs / 21.7 Nm
-6	35 ft-lbs / 47.5 Nm
-8	60 ft-lbs / 81.3 Nm
-10	105 ft-lbs / 142.4 Nm
-12	140 ft-lbs / 190 Nm
-16	210 ft-lbs / 284.7 Nm
-20	260 ft-lbs / 352.5 Nm
-24	315 ft-lbs / 427.1 Nm

Seal-Lok® Fittings
(hose end)

SAE Dash size	Torque
-4	18 ft-lbs / 24.4 Nm
-6	27 ft-lbs / 36.6 Nm
-8	40 ft-lbs / 54.2 Nm
-10	63 ft-lbs / 85.4 Nm
-12	90 ft-lbs / 122 Nm
-16	120 ft-lbs / 162.7 Nm
-20	140 ft-lbs / 190 Nm
-24	165 ft-lbs / 223.7 Nm

Theory Of Operation

REV A

Power Source

The Genie S-80 and Genie S-85 are powered by either a Gasoline/LPG engine or one of two diesel engines. The Gasoline/LPG option uses a GM 3.0L EFI engine rated at 67 horsepower @ 2300 rpm. The diesel engine options include a Deutz F4L 913 rated at 76 horsepower @ 2300 rpm, and a Perkins 704-30 rated at 61 horsepower @ 2300 rpm.

Hydraulic System

All machine functions are performed by the hydraulic system. The hydraulic system is divided into three groups: Boom and Steer/Axle functions, Oscillate functions and Drive functions.

Boom and Steer/Axle functions are powered by the inner section of the dual section tandem gear pump rated at 12.7 gpm / 48 L/min at 2300 rpm. When the engine is running, this pump supplies hydraulic fluid under pressure to the function manifold and axle select manifold, where the directional and flow control valves are located. To protect from over-pressurization of the Boom and Steer/Axle system, the pump is provided with a pressure relief valve, set at 2900 psi / 200 bar.

Oscillate functions are powered by the outer section of the dual section tandem gear pump rated at 2.25 gpm / 8.5 L/min at 2300 rpm. When the engine is running, this pump supplies hydraulic fluid under pressure to the oscillate control valve. To protect from over-pressurization of the Oscillate system, the pump is provided with a pressure relief valve, set at 950 psi / 65.5 bar.

Drive functions are powered by a bi-directional, variable output piston pump rated at 0 to 30.3 gpm / 0 to 114.7 L/min at 2300 rpm. Two internal 3625 psi / 250 bar relief valves are used to prevent over-pressurization of the closed loop drive system.

The boom lift cylinder, boom extend cylinder, platform leveling slave cylinder, platform rotator, turntable rotate motor and jib boom cylinder (S-85 models) incorporate counterbalance valves to prevent movement in the event of a hydraulic line failure.

A regeneration circuit is used to increase the performance of the primary boom extension function. This circuit transfers hydraulic fluid from one end of the primary cylinder into the other end when the cylinder is extending.

The auxiliary pump is a single-section gear pump with a static displacement of 0.151 cu in / 2.47 cc. The auxiliary pump provides hydraulic fluid under pressure in the event of a main power loss. The auxiliary pump should only be used at short intervals as to not drain the battery or overheat the pump.

Electrical System

Two identical 12V DC batteries are used for this system. One of the batteries is used for engine starting purposes only. The other battery is used to power the control system and the auxiliary power unit. The batteries are charged through a common, engine-driven alternator. A battery separator is used to charge the control system/auxiliary power unit battery before charging the engine starting battery. The engine and control system are protected by individual 15A circuit breakers that may be manually reset. The hydraulic oil cooler and other machine options or accessories are protected by a 20A circuit breaker that may be manually reset. The 20A circuit breaker receives power from the engine starting battery.

Boom/Steer functions are accomplished by pressing down the foot switch (when operating from the platform controls) OR activating the function enable toggle switch (when operating from the ground controls) and activating the desired joystick controller or toggle switch. When a toggle switch or a joystick controller is activated, it sends voltage to the appropriate directional control valve. These directional valves determine which direction the hydraulic fluid will travel. The volume of hydraulic fluid is determined by either a proportional valve or flow regulator valve. A proportional valve receives a variable voltage signal and delivers more hydraulic fluid as the voltage increases. A flow regulator valve is a mechanical valve and delivers a predetermined amount of hydraulic fluid.

Drive forward or reverse is accomplished by pressing down the foot switch in the platform and moving the drive controller (joystick) in the appropriate direction. When activated, the drive controller completes a circuit to the Electronic Displacement Controller (EDC). The EDC regulates drive pump displacement in direct relation to the drive controller position.

Limit switches

There are two types of limit switches which are found in various locations on the machine: drive speed limit switches and a drive enable limit switch. A drive speed limit switch performs two functions. One function of a drive speed limit switch is to limit the raised or extended drive speed to 0.68 miles per hour / 1.1 km/h when the boom is raised above horizontal OR when the primary boom is extended approximately 12 inches / 30.5 cm. The other function of a drive speed limit switch is to prevent the boom from being raised past 5° above horizontal OR extending the boom more than 12 inches / 30.5 cm if the axles are not fully extended. They also prevent the axles from being retracted when the boom is raised above horizontal or when the boom is extended more than 12 inches / 30.5 cm.

There are 2 pairs of drive speed limit switches. One pair, located at the boom pivot, are used for boom up and down. The other pair are used for boom extend and retract. One switch is located at the platform end of the extension boom and other one is located inside the boom at the pivot end of the boom. One limit switch of each pair is used as a safety back-up in case one of them becomes faulty.

The function of the drive enable limit switch is to limit the ability of the machine to drive when the boom is rotated beyond the non-steer wheels.

Machine Controls

The Genie S-80 and Genie S-85 machines are equipped with operational controls which are found in two locations: the ground controls, located on the tank side of the machine, and the platform controls, located in the platform. All lift and drive functions are available at the platform controls. Only boom functions are available at the ground controls.

Ground controls are activated by holding the function enable toggle switch to either side, then moving a boom function toggle switch in the direction indicated on the control panel decal. This will determine which boom function will operate and its direction of travel.

Platform controls use toggle switches and boom function controllers (joysticks) to operate the boom functions. The drive controller (joystick) regulates the drive pump displacement through the EDC in direct relation to the drive controller position. A thumb rocker switch on the top of the drive controller is used for steering. If the foot switch is pressed down for more than 2 minutes without activating a machine function, the platform controls will be locked out. To resume operating the machine normally, release the foot switch and press down the foot switch.

NOTICE Washing electronic components is not suggested. Instead, use compressed air to remove debris.

Scheduled Maintenance Procedures

Observe and Obey:

- ☑ Maintenance inspections shall be completed by a person trained and qualified on the maintenance of this machine.
- ☑ Scheduled maintenance inspections shall be completed daily, quarterly, semi-annually, annually and every 2 years as specified on the *Maintenance Inspection Report.*

⚠WARNING Failure to perform each procedure as presented and scheduled could result in death, serious injury or substantial machine damage.

- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating machine.
- ☑ Keep records on all inspections for three years.
- ☑ Unless otherwise specified, perform each procedure with the machine in the following configuration:
  - Machine parked on a firm, level surface
  - Boom in the stowed position
  - Turntable rotated with the boom between the non-steer wheels
  - Turntable secured with the turntable rotation lock pin
  - Key switch in the off position with the key removed
  - Wheels chocked

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

Each procedure includes a description, safety warnings and step-by-step instructions.

Symbols Legend

Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER Red—used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Orange—used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Yellow with safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION Yellow without safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE Green—used to indicate operation or maintenance information.

⊙ Indicates that a specific result is expected after performing a series of steps.

SCHEDULED MAINTENANCE PROCEDURES

Maintenance Symbols Legend

NOTICE The following symbols have been used in this manual to help communicate the intent of the instructions. When one or more of the symbols appear at the beginning of a maintenance procedure, it conveys the meaning below.

Indicates that tools will be required to perform this procedure.

Indicates that new parts will be required to perform this procedure.

Indicates that a cold engine will be required to perform this procedure.

Indicates that a warm engine will be required to perform this procedure.

Indicates that dealer service is required to perform this procedure.

Pre-delivery Preparation Report

The pre-delivery preparation report contains checklists for each type of scheduled inspection.

Make copies of the *Pre-delivery Preparation Report* to use for each inspection. Store completed forms as required.

Maintenance Schedule

There are five types of maintenance inspections that must be performed according to a schedule—daily, quarterly, six months, annual, and two year. To account for repeated procedures, the *Scheduled Maintenance Procedures Section* and the *Maintenance Inspection Report* have been divided into five subsections—A, B, C, D and E. Use the following chart to determine which group(s) of procedures are required to perform a scheduled inspection.

Inspection	Checklist
Daily or every 8 hours	A
Quarterly or every 250 hours	A + B
Six month or every 500 hours	A + B + C
Annual or every 1000 hours	A + B + C + D
Two year or every 2000 hours	A + B + C + D + E

Maintenance Inspection Report

The maintenance inspection report contains checklists for each type of scheduled inspection.

Make copies of the *Maintenance Inspection Report* to use for each inspection. Store completed forms for three years.

Pre-Delivery Preparation

Fundamentals

It is the responsibility of the dealer to perform the Pre-delivery Preparation.

The Pre-delivery Preparation is performed prior to each delivery. The inspection is designed to discover if anything is apparently wrong with a machine before it is put into service.

A damaged or modified machine must never be used. If damage or any variation from factory delivered condition is discovered, the machine must be tagged and removed from service.

Repairs to the machine may only be made by a qualified service technician, according to the manufacturer's specifications.

Scheduled maintenance inspections shall be performed by qualified service technicians, according to the manufacturer's specifications and the requirements listed in the responsibilities manual.

Instructions

Use the operator's manual on your machine.

The Pre-delivery Preparation consists of completing the Pre-operation Inspection, the Maintenance items and the Function Tests.

Use this form to record the results. Place a check in the appropriate box after each part is completed. Follow the instructions in the operator's manual.

If any inspection receives an N, remove the machine from service, repair and re-inspect it. After repair, place a check in the R box.

Legend

Y = yes, completed
N = no, unable to complete
R = repaired

Comments

Pre-Delivery Preparation	Y	N	R
Pre-operation inspection completed			
Maintenance items completed			
Function tests completed			

Model

Serial number

Date

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Genie Industries USA
18340 NE 76th Street
PO Box 97030
Redmond, WA 98073-9730
(425) 881-1800

Genie UK
The Maltings, Wharf Road
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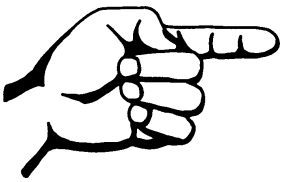
Rev A



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Maintenance Inspection Report

Model

Serial number

Date

Hour meter

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Instructions

- Make copies of this report to use for each inspection.
- Select the appropriate checklist(s) for the type of inspection to be performed.

☐	**Daily or 8 hour Inspection:**	**A**
☐	**Quarterly or 250 hour Inspection:**	**A+B**
☐	**Six Month or 500 hour Inspection:**	**A+B+C**
☐	**Annual or 1000 hour Inspection:**	**A+B+C+D**
☐	**2 Year or 2000 hour Inspection:**	**A+B+C+D+E**

- Place a check in the appropriate box after each inspection procedure is completed.
- Use the step-by-step procedures in this section to learn how to perform these inspections.
- If any inspection receives an “N”, tag and remove the machine from service, repair and re-inspect it. After repair, place a check in the “R” box.

Legend

Y = yes, acceptable

N = no, remove from service

R = repaired

Comments

Checklist A - Rev B		**Y**	**N**	**R**
A-1	Manuals			
A-2	Decals and placards			
A-3	Damage and loose or missing parts			
A-4	Engine oil level			
A-5	Engine coolant level, Liquid-cooled models			
A-6	Air filter			
A-7	Fuel leaks			
A-8	Hydraulic oil level			
A-9	Hydraulic leaks			
A-10	Hydraulic filter condition indicators			
A-11	Tire pressure			
A-12	Extendable axles			
A-13	Oscillate axle			
A-14	Platform and ground controls			
A-15	Auxiliary power			
A-16	Tilt sensor and alarm			
A-17	Limit switches			
A-18	Drain filter/separator - Diesel models			
Perform after 40 hours:				
A-19	30 Day Service			
A-20	Engine fasteners - Deutz models			
Perform every 100 hours:				
A-21	Inspect radiator, Liquid-cooled models			
A-22	Alternator belt - GM models			
A-23	Electrical wiring			
A-24	Batteries			
A-25	Grease rotation bearing			
Perform after 150 hours:				
A-26	Drive hub oil			
Perform every 200 hours:				
A-27	Replace engine oil and filter - GM models			
A-28	Replace fuel filter - GM models			

Checklist B - Rev A		**Y**	**N**	**R**
B-1	Engine oil cooler and fins - Deutz models			
B-2	Engine belt - Deutz and Perkins models			
B-3	Replace air filter			
B-4	Exhaust system			
B-5	Replace hydraulic filters			
B-6	Brake configuration			
B-7	Tires and wheels			
B-8	Drive hub oil level			
B-9	Engine RPM			
B-10	Key switch			
B-11	Emergency Stop			
B-12	Ground control override			
B-13	Platform self leveling			
B-14	Horn			
B-15	Foot switch			
B-16	Engine idle select			
B-17	Fuel select - GM models			
B-18	Drive enable system			
B-19	Drive brakes			
B-20	Drive speed-stowed			
B-21	Drive speed-raised or extended			
B-22	Alarm package			
B-23	Inspect fuel tank cap venting system			
B-24	Hydraulic oil analysis			
Perform every 400 hours:				
B-25	Replace spark plugs - GM models			

MAINTENANCE INSPECTION REPORT

Instructions

- Make copies of this report to use for each inspection.
- Select the appropriate checklist(s) for the type of inspection to be performed.

	Daily or 8 hour Inspection:	**A**
	Quarterly or 250 hour Inspection:	**A+B**
	Six Month or 500 hour Inspection:	**A+B+C**
	Annual or 1000 hour Inspection:	**A+B+C+D**
	2 Year or 2000 hour Inspection:	**A+B+C+D+E**

- Place a check in the appropriate box after each inspection procedure is completed.
- Use the step-by-step procedures in this section to learn how to perform these inspections.
- If any inspection receives an “N”, tag and remove the machine from service, repair and re-inspect it. After repair, place a check in the “R” box.

Legend

Y = yes, acceptable

N = no, remove from service

R = repaired

Comments

Checklist C - Rev B	**Y**	**N**	**R**
C-1 Valve clearances - Deutz models			
C-2 Replace fuel filter - Perkins models			
C-3 Replace filter/ separator - Diesel models			
C-4 Starting aid - Perkins models			
C-5 Engine coolant, Liquid-cooled models			
C-6 Engine oil and filter - Deutz and Perkins models			
C-7 Grease platform overload (if equipped)			
C-8 Test platform overload (if equipped)			
Perform every 800 hours:			
C-9 Engine coolant - GM models			
C-10 PCV valve - GM models			
C-11 LPG filter - GM models			
C-12 Cap and rotor - GM models			

Checklist D - Rev B	**Y**	**N**	**R**
D-1 Boom wear pads			
D-2 Axle wear pads			
D-3 Free-wheel configuration			
D-4 Turntable rotation bearing bolts			
D-5 Fuel pump strainer - Deutz models			
D-6 Replace fuel filter - Deutz models			
D-7 Replace fuel hoses - Deutz models			
D-8 Clean engine breather - Perkins models			
D-9 Valve clearances - Perkins models			
D-10 Calibrate platform overload (if equipped)			
Perform every 1500 hours:			
D-11 Drive hub oil			

Checklist E - Rev B	**Y**	**N**	**R**
E-1 Hydraulic oil			
E-2 Engine coolant, Liquid-cooled models			
E-3 Engine breather - Perkins models			
E-4 Grease axle bearings, 2WD models			
Perform every 3000 hours:			
E-5 Fuel injectors- Perkins models			

Checklist A Procedures

REV B

A-1
Inspect the Operator's and Safety Manuals

Maintaining the operator's and safety manuals in good condition is essential to safe machine operation. Manuals are included with each machine and should be stored in the container provided in the platform. An illegible or missing manual will not provide safety and operational information necessary for a safe operating condition.

1 Confirm that the storage container is present and in good condition.

2 Confirm that the operator's, responsibilities and safety manuals are present and complete in the storage container in the platform.

3 Examine the pages of each manual to be sure that they are legible and in good condition.

4 Always return the manuals to the storage container after use.

NOTICE Contact your authorized Genie distributor or Genie Industries if replacement manuals are needed.

A-2
Inspect the Decals and Placards

Maintaining all of the safety and instructional decals and placards in good condition is mandatory for safe machine operation. Decals alert operators and personnel to the many possible hazards associated with using this machine. They also provide users with operation and maintenance information. An illegible decal will fail to alert personnel of a procedure or hazard and could result in unsafe operating conditions.

1 Refer to the *Decals* section in the *Genie S-80 and Genie S-85 Operator's Manual* and use the decal list and illustrations to determine that all decals and placards are in place.

2 Inspect all decals for legibility and damage. Replace any damaged or illegible decal immediately.

NOTICE Contact your authorized Genie distributor or Genie Industries if replacement decals are needed.

CHECKLIST A PROCEDURES REV B

A-3
Inspect for Damage and Loose or Missing Parts

Daily machine condition inspections are essential to safe machine operation and good machine performance. Failure to locate and repair damage, and discover loose or missing parts may result in an unsafe operating condition.

1 Inspect the entire machine for damage and improperly installed or missing parts including:
   - Electrical components, wiring and electrical cables
   - Hydraulic hoses, fittings, cylinders and manifolds
   - Hydraulic oil cooler and fan
   - Fuel and hydraulic tanks
   - Drive and turntable motors and drive hubs
   - Boom wear pads
   - Axle wear pads
   - Tires and wheels
   - Engine and related components
   - Limit switches and horn
   - Alarms and beacons (if equipped)
   - Nuts, bolts and other fasteners
   - Platform entry mid-rail or gate

Check entire machine for:

- Cracks in welds or structural components
- Dents or damage to machine
- Compartment covers and latches
- Be sure that all structural and other critical components are present and all associated fasteners and pins are in place and properly tightened.
- After you complete your inspection, be sure that all compartment covers are in place and secured.

REV B

CHECKLIST A PROCEDURES

A-4
Check the Engine Oil Level

Maintaining the proper engine oil level is essential to good engine performance and service life. Operating the machine with an improper oil level can damage engine components.

NOTICE Check the oil level with the engine off.

1 Check the engine oil dipstick.

GM models:

- Result: The oil level should be within the ADD and FULL marks on the dipstick.

Deutz models:

- Result: The oil level should be within the two marks on the dipstick.

Perkins models:

- Result: The oil level should be within the two notches on the dipstick.

GM 3.0L EFI Engine	5 quarts
Oil capacity (including filter)	4.7 liters

Oil viscosity requirements	
Below 0°F / -17.8°C	5W-30
Above 0°F / -17.8°C	10W-30

Only use engine oils labeled "**For Gasoline Engines**" by the American Petroleum Institute (API).

Deutz F4L 913 Engine	14.3 quarts
Oil capacity (including filter)	13.5 liters

Oil viscosity requirements	
Below 77°F / 25°C	5W-30 (synthetic)
-13°F to 86°F / -25°C to 30°C	10W-40
Above -4°F / -20°C	15W-40

Engine oil should have minimum properties of API classification CD grade OR ACEA classification E1-96.

Perkins 704-30 Engine	7.4 quarts
Oil capacity (including filter)	7 liters

Oil viscosity requirements	
-13°F to 68°F / -25°C to 20°C	5W-20
5°F to 104°F / -15°C to 40°C	10W-30
Above 14°F / -10°C	15W-40

Engine oil should have minimum properties of API classification CC/SE.

CHECKLIST A PROCEDURES REV B

A-5
Check the Engine Coolant Level, Liquid-cooled Models

Maintaining the engine coolant at the proper level is essential to engine service life. Improper coolant level will affect the engine's cooling capability and damage engine components. Daily checks will allow the inspector to identify changes in coolant level that might indicate cooling system problems.

⚠CAUTION Burn hazard. Beware of hot engine parts and coolant. Contact with hot engine parts and/or coolant may cause severe burns.

1 Check the fluid level in the coolant recovery tank. Add fluid as needed.

⊙ Result: The fluid level should be at the FULL mark.

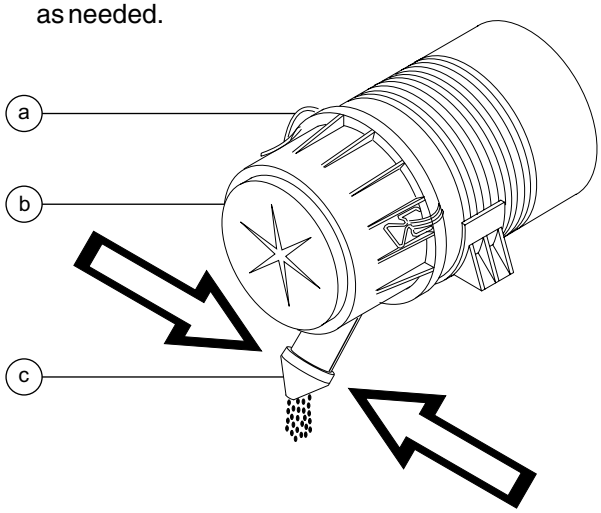
NOTICE Do not remove the radiator cap.

A-6
Inspect the Engine Air Filter

Maintaining the engine air filter in good condition is essential to good engine performance and service life. Failure to perform this procedure can lead to poor engine performance and component damage.

NOTICE Perform this procedure with the engine off.

1 Open the engine side cover. Empty the dust discharge valve by pressing together the sides of the discharge slot. Clean the discharge slot as needed.



a clamp
b cannister end cap
c dust discharge valve

2 Release the clamps from the end cap of the air filter canister. Remove the end cap.

3 Remove the filter element.

4 Clean the inside of the canister and the canister end cap with a damp cloth.

5 Inspect the filter element. If needed, blow from the inside out using low pressure dry compressed air, or tap out dust, taking care not to damage the element.

6 Install the filter element.

7 Install the end cap onto the canister. Secure the clamps.

Air filter element - Genie part numbers	
Deutz models	62425
GM and Perkins models	62420

A-7
Check for Fuel Leaks

Failure to detect and correct fuel leaks will result in an unsafe condition. An explosion or fuel fire may cause death or serious injury.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Inspect the machine in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

1 **GM models:** Open the shutoff valve on the liquid petroleum gas (LPG) tank by turning it counterclockwise (if equipped).

2 Perform a visual inspection around the following areas.

GM models:

· LPG tank, hoses and fittings, solenoid shutoff valve, LPG regulator and throttle body.

NOTICE An LPG detector may be necessary to locate LPG leaks.

· Fuel tank, manual shutoff valve (if equipped), fuel pump, fuel filter, hoses and fittings and throttle body.

Diesel models:

· Fuel tank, manual shutoff valve (if equipped), hoses and fittings, fuel pump, fuel filter, fuel injection pumps and fuel injectors (atomizers).

⚠DANGER Explosion and fire hazard. If a fuel leak is discovered, keep any additional personnel from entering the area and do not operate the machine. Repair the leak immediately.

CHECKLIST A PROCEDURES REV B

A-8
Check the Hydraulic Oil Level

Maintaining the hydraulic oil at the proper level is essential to machine operation. Improper hydraulic oil levels can damage hydraulic components. Daily checks allow the inspector to identify changes in oil level that might indicate the presence of hydraulic system problems.

NOTICE Perform this procedure with the boom in the stowed position.

1 Visually inspect the sight gauge located on the side of the hydraulic oil tank.

⊙ Result: The hydraulic oil level should be within the top 2 inches / 5 cm of the sight gauge.

2 Add oil as needed.

Hydraulic oil capacity specifications

Hydraulic tank	45 gallons 170 liters
Hydraulic system (including tank)	55 gallons 208 liters

Hydraulic oil specifications

Before serial number 3349

Hydraulic oil type	Shell Donax TG (Dexron III)

After serial number 3348

Hydraulic oil type	Chevron Rykon MV equivalent
Approximate SAE grade	5W-20
Viscosity index rating	200

Chevron Rykon MV oil is fully compatible and mixable with Shell Donax TG (Dexron III) oils.
Genie specifications require hydraulic oils which are designed to give maximum protection to hydraulic systems, have the ability to perform over a wide temperature range, and have a minimum viscosity index rating of 150. They should provide excellent antiwear, oxidation, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.

Optional fluids

Biodegradable	Petro Canada Premium ECO 46 Statoil Hydra Way Bio Pa 32 BP Biohyd SE-S
Fire resistant	UCON Hydrolube HP-5046 Quintolubric 822
Mineral based	Shell Tellus T32 Shell Tellus T46 Chevron Aviation A

NOTICE Genie specifications require additional equipment and special installation instructions for the approved optional fluids. Consult the Genie Industries Service Department before use.

REV B CHECKLIST A PROCEDURES

A-9
Check for Hydraulic Leaks

Detecting hydraulic fluid leaks is essential to operational safety and good machine performance. Undiscovered leaks can develop into hazardous situations, impair machine functions and damage machine components.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin.

1 Inspect for hydraulic oil puddles, dripping or residue on or around the following areas:

- Hydraulic tank—filter, fittings, hoses, auxiliary power unit and turntable surface
- Hydraulic oil cooler
- Engine compartment—hydraulic filters, fittings, hoses, pumps and turntable surface
- All hydraulic cylinders
- All hydraulic manifolds
- Boom and jib boom (if equipped)
- The underside of the turntable
- The underside of the drive chassis
- Axles
- Ground area under the machine

A-10
Check the Hydraulic Filter Condition Indicators

Maintaining the hydraulic filters in good condition is essential to good system performance and safe machine operation. The filter condition indicators will show when the hydraulic flow is bypassing a clogged filter. If the filters are not frequently checked and replaced, impurities will remain in the hydraulic system and cause component damage.

NOTICE There are three hydraulic filters located on the machine: one tank return filter, one medium pressure filter and one high pressure filter. The tank return and high pressure filter have a condition indicator on them. The medium pressure filter does not have a filter condition indicator.

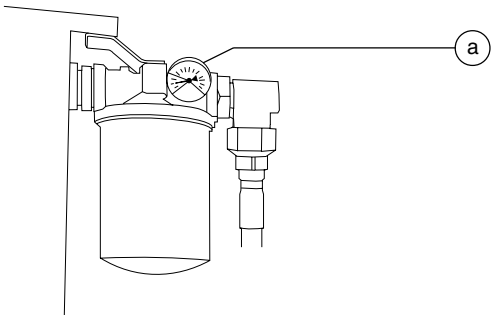
1 Start the engine from the platform controls.

2 Change the engine idle to high rpm (rabbit symbol).

CHECKLIST A PROCEDURES REV B

Tank Return Filter

3 Open the ground control side turntable cover and inspect the filter condition indicator gauge.



a filter condition indicator gauge

⊙ Result: The needle on the gauge should be operating in the green area. If the needle is in the red area, this indicates that the hydraulic filter is being bypassed and the filter should be replaced. See B-5, *Replace the Hydraulic Filters.*

High Pressure Filter

NOTICE The high pressure filter is located to the left of the medium pressure filter below the hydraulic pumps. A filter condition indicator is located on the top of the high pressure filter.

4 Open the engine side turntable cover and Inspect the filter condition indicator.

⊙ Result: The filter condition indicators should be operating with the plungers in the green area. If the indicator displays the plunger in the red area, this indicates that the hydraulic filter is being bypassed and the filter should be replaced. See B-5, *Replace the Hydraulic Filters.*

A-11
Check the Tire Pressure

⚠WARNING Bodily injury hazard. An over-inflated tire can explode and could result in death or serious injury.

⚠WARNING Tip-over hazard. Do not use temporary flat tire repair products.

NOTICE This procedure does not need to be performed on machines equipped with the foam-filled tire option.

NOTICE To safeguard maximum stability, achieve optimum machine handling and minimize tire wear, it is essential to maintain proper pressure in all air-filled tires.

1 Check each tire with an air pressure gauge. Add air as needed.

Tire specifications

Pressure	100 psi 6.9 bar

A-12
Test the Extendable Axles

⚠ DANGER Tip-over hazard. Do not raise or extend the boom unless both axles are fully extended. If the axle extension system is not operating correctly, the stability of the machine is compromised and it may tip over.

NOTICE Be sure the axles are retracted before performing this procedure.

1 Turn the key switch to ground control and pull out the red Emergency Stop buttons to the on position at both the ground and platform controls.

2 Start the engine from the ground controls.

3 Move and hold the function enable switch to either side and activate the boom up function.

⊙ Result: The boom should raise to horizontal and then stop. The boom should not raise above the limit switch unless both axles are extended.

4 Move and hold the function enable switch to either side and activate the boom down function.

⊙ Result: The boom should lower and return to the stowed position.

5 Move and hold the function enable switch to either side and activate the boom extend function.

⊙ Result: The boom will extend approximately 1 foot / 30 cm and then stop. The boom should not extend farther unless both axles are extended.

6 Move and hold the function enable switch to either side and activate the boom retract function.

⊙ Result: The boom should retract.

7 Turn the key switch to platform controls.

8 Press down the foot switch and move the drive control handle in the forward direction and activate the axle extend function.

⊙ Result: The machine will drive forward and the axles should extend.

NOTICE The axle extend function will only work while the machine is moving.

NOTICE The steer function will override the axle extend or the axle retract function.

9 Turn the key switch to ground controls.

10 At the ground controls, hold the function enable switch to either side and activate the boom up and boom down function.

⊙ Result: The boom should raise and lower normally.

11 At the ground controls, move and hold the function enable switch to either side and activate the boom extend and boom retract function.

⊙ Result: The boom should extend and retract normally.

CHECKLIST A PROCEDURES REV B

A-13
Test the Oscillate Axle

Proper axle oscillation is essential to safe machine operation. If the axle oscillation system is not operating correctly, the stability of the machine is compromised and it may tip over.

⚠ DANGER Tip-over hazard. Failure to perform this procedure on a firm, level surface will compromise the stability of the machine and could result in the machine tipping over.

1 Start the engine from the platform controls.

2 Drive the right steer tire up onto a 6 inch / 15 cm block or curb.

⊙ Result: The three remaining tires should stay in firm contact with the ground and the chassis should remain level at all times.

3 Drive the left steer tire up onto a 6 inch / 15 cm block or curb.

⊙ Result: The three remaining tires should stay in firm contact with the ground and the chassis should remain level at all times.

4 Drive both steer tires up onto a 6 inch / 15 cm block or curb.

⊙ Result: The non-steer tires should stay in firm contact with the ground.

NOTICE If the chassis does not remain level during test, see *How to Adjust the Oscillate Limit Switches.*

How to Set Up the Directional Valve Linkage:

NOTICE Perform this procedure on a firm, level surface.

1 Lower the boom to the stowed position.

2 Use a "bubble type" level to be sure the surface the machine is on is completely level.

⚠ DANGER Tip-over hazard. Failure to perform this procedure on a firm, level surface will compromise the stability of the machine and could result in the machine tipping over.

3 Check the tire pressure in all four tires and add air if needed to meet specification.

4 Remove the drive chassis cover from the non-steer end of the machine.

5 Disconnect the linkage clevis yoke from the axle.

6 Place a "bubble type" level on the turntable rotate bearing plate at the non-steer end. Check to be sure the drive chassis is completely level.

7 To level the drive chassis, start the engine and push up or pull down on the linkage adjustment rod until the machine is completely level.

8 Verify that the ground and drive chassis are completely level.

9 Adjust the length of the rod by turning the clevis yoke until the clevis yoke can be pinned to the axle.

10 Install the shoulder bolt and nut.

11 Measure the distance between the drive chassis and the non-steer axle on both sides (from the inside of the drive chassis).

⊙ Result: The measurements should be equal.

NOTICE If the distance is not equal and the adjustment to the linkage was completed with the ground and drive chassis level, consult Genie Industries Service Department.

A-14
Test the Platform and Ground Controls

Testing the machine functions and the red Emergency Stop buttons for malfunctions is essential for safe machine operation. An unsafe working condition exists if any function fails to operate properly or either red Emergency Stop button fails to stop all the machine functions and shut off the engine. Each function should activate, operate smoothly and be free of hesitation, jerking and unusual noise.

1 Pull out the red Emergency Stop buttons to the on position at both the ground and platform controls.

2 Start the engine from the platform control.

3 Press down the foot switch and extend the axles.

NOTICE The axle extend function will only work while the machine is moving.

4 Turn the key switch to ground controls.

5 Do not hold the function enable switch to either side. Attempt to activate each boom and platform function toggle switch.

⊙ Result: All boom and platform functions should not operate.

6 Hold the function enable switch to either side and activate each boom and platform function toggle switch.

⊙ Result: All boom and platform functions should operate through a full cycle. Descent alarm (if equipped) should sound while the boom is lowering.

NOTICE The boom will not raise past horizontal and the boom will not extend more than 12 inches / 30.5 cm unless both axles are fully extended.

7 Push in the red Emergency Stop button to the off position at the ground controls.

⊙ Result: The engine should turn off and all functions should not operate.

8 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at the ground controls.

9 Press down the foot switch and attempt to start the engine from the platform controls.

⊙ Result: The engine should not start.

10 Do not press down on the foot switch.

11 Start the engine from the platform controls.

12 Attempt to operate all machine functions.

⊙ Result: All machine functions should **not** operate.

13 Press down the foot switch and activate each machine function.

⊙ Result: All machine functions should operate through a full cycle.

14 Push in the red Emergency Stop button to the off position at the platform controls.

⊙ Result: The engine should turn off and all functions should not operate.

NOTICE As a safety feature, selecting and operating the ground controls will override the platform controls, including the red Emergency Stop button.

A-15
Test the Auxiliary Power Operation

Detection of auxiliary power system malfunctions is essential for safe machine operation. An unsafe working condition exists if the auxiliary powered functions do not operate in the event of a main power loss. When operating the machine on engine power, selecting auxiliary power will stop the engine immediately. Auxiliary power is designed for short term use only, and excessive use will result in battery drain and component damage.

NOTICE Perform this procedure with the engine off.

1 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position.

2 Simultaneously hold the auxiliary power toggle switch on and activate each boom function toggle switch.

⊙ Result: All boom functions should operate.

NOTICE To conserve battery power, test each function through a partial cycle.

NOTICE The boom will not raise past horizontal and the boom will not extend more than 12 inches / 30.5 cm unless both axles are fully extended.

3 Turn the key switch to platform control.

4 Pull out the red Emergency Stop button to the on position at the platform controls.

5 Press down the foot switch and simultaneously hold the auxiliary power toggle switch on and activate each function controller or toggle switch.

⊙ Result: All boom and steer functions should operate. Drive functions will not operate using auxiliary power.

NOTICE The boom will not raise past horizontal and the boom will not extend more than 12 inches / 30.5 cm unless both axles are fully extended.

NOTICE To conserve battery power, test each function through a partial cycle.

6 Start the engine from the platform controls.

7 Press down the foot switch.

8 Hold the auxiliary power toggle switch in the on position.

⊙ Result: The engine should stop.

9 Start the engine from the ground controls.

10 Hold the auxiliary power toggle switch in the on position.

⊙ Result: The engine should stop.

A-16
Test the Tilt Sensor and Alarm

The tilt sensor sounds an alarm located in the platform when the incline of the turntable exceeds the rating on the serial plate.

NOTICE Select a level test area. The tilt alarm should not be sounding prior to the test.

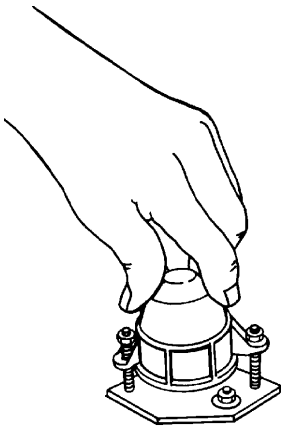
1 Start the engine from the platform controls.

2 Open the tank side turntable cover and locate the tilt sensor next to the ground control box.

3 Press down on one side of the tilt sensor.

⊙ Result: The alarm, located in the platform, should sound.

⚠WARNING Tip-over hazard. The alarm should be audible at the ground controls. If the alarm is not audible at the ground controls, replace the alarm in the platform.



CHECKLIST A PROCEDURES REV B

A-17
Test the Limit Switches

Drive Limit Switches

Detecting limit switch malfunctions is essential to safe machine operation. The drive limit switches have two functions:
To restrict drive speed when the boom is raised or extended and to prevent raising the boom past horizontal or extending the boom more than 12 inches / 30.5 cm unless the axles are fully extended. An improperly functioning drive limit switch will allow the machine to operate in an unsafe position.

NOTICE Perform this procedure with the axles fully retracted.

1 Remove the cover from the rear of the turntable to access the drive limit switches.

2 Visually inspect both boom up drive limit switches (LS2RO and LS2RS) mounted to the turntable riser at the pivot end of the boom. Inspect for the following:

- Broken or missing roller or arm
- Loose or missing fasteners
- Loose wiring

3 Manually activate the boom up drive limit switch (LS2RS) which is located on the engine side of the turntable riser.

⊙ Result: The boom up drive limit switch arm (LS2RS) should move freely and spring return to center.

4 Start the engine from the ground controls.

5 Raise the boom to just above horizontal.

6 Manually activate the boom up drive limit switch (LS2RO) which is located on the ground controls side of the turntable riser.

⊙ Result: The boom up drive limit switch arm (LS2RO) should move freely and spring return to center.

7 Lower the boom to the stowed position.

8 Visually inspect the boom extend drive limit switch (LS1RS) located inside the boom at the pivot end of the boom. Inspect for the following:

- Broken or missing roller or arm
- Missing fasteners
- Loose wiring

9 Manually activate the boom extend drive limit switch (LS1RS).

⊙ Result: The boom extend drive limit switch arm should move freely and spring return to center.

10 Extend the boom approximately 12 inches / 30.5 cm.

11 Manually activate the boom extend drive limit switch (LS1RO) located at the platform end of the boom.

⊙ Result: The boom extend drive limit switch arm should move freely and spring return to center.

12 Fully retract the boom.

13 Turn the key switch to platform controls.

14 Press down the foot switch and slowly move the drive controller off center.

⊙ Result: The machine should move at normal drive speeds.

15 Raise the boom to just above horizontal.

⊙ Result: The boom should raise to horizontal and stop. The axle extend/retract indicator light should be on. The boom should not raise above the limit switches unless both axles are extended.

16 Slowly move the drive controller off center.

⊙ Result: The machine should move at a reduced drive speed.

17 Lower the boom to the stowed position, then extend the boom approximately 12 inches / 30.5 cm.

⊙ Result: The boom should extend to approximately 12 inches / 30.5 cm and stop. The axle extend/retract indicator light should be on. The boom should not extend past the limit switches unless both axles are extended.

18 Slowly move the drive controller off center.

⊙ Result: The machine should move at a reduced drive speed.

19 Fully retract the boom.

20 Slowly move the drive controller off center and activate the axle extend function.

⊙ Result: The machine should drive and the axles should extend.

NOTICE The axle extend function will only work while the machine is driving.

NOTICE The steer function will override the axle extend or the axle retract function.

21 Activate the boom up/down and boom extend/retract functions.

⊙ Result: The boom up/down and boom extend/retract functions should operate through a full cycle.

Drive speed, maximum

Raised or extended position	0.68 mph 1.1 km/h 40 ft / 45.5 sec 12.2 m / 45.5 sec

CHECKLIST A PROCEDURES REV B

Drive Enable Limit Switch

Proper drive enable system operation is essential to safe machine operation and workplace safety. An improperly functioning drive enable system may allow the machine to be moved into an unsafe position.

When the boom is rotated past one of the non-steer end wheels while the machine is moving, the indicator light will turn on and the drive function will continue to operate until the drive control joystick is returned to neutral.
The drive enable switch must be activated to reactivate the drive function and should inform the operator that the machine may move in the opposite direction that the drive and steer controls are moved.

When the boom is rotated past one of the non-steer end wheels and the machine is not moving, the indicator light will turn on and the drive function should not operate.

NOTICE Perform this procedure with the boom in the stowed position and the axles fully extended.

1 Start the engine from the ground controls and rotate the turntable to the left until the boom is past the left non-steer wheel.

2 Raise the boom far enough to access the boom storage cover fasteners. Turn the engine off.

3 Remove the boom storage cover mounting fasteners. Remove the cover.

4 Locate the drive enable limit switch (LS3) next to the hydraulic rotary coupler.

5 Visually inspect the drive enable limit switch for the following:

- Broken or missing roller or arm
- Missing fasteners
- Loose wiring

6 Manually activate the drive enable limit switch (LS3).

⊙ Result: The drive enable limit switch arm should move freely and spring return to center.

7 Install the boom storage cover and install the mounting fasteners.

8 Start the engine from the ground controls and lower the boom to the stowed position.

9 Turn the key switch to platform controls.

10 Press down the foot switch.

⊙ Result: The drive enable indicator light should be on.

11 Rotate the turntable so the boom is between the non-steer wheels.

⊙ Result: The drive enable indicator light should be off and drive function should operate.

12 Rotate the turntable until the boom moves past one of the the non-steer wheels.

⊙ Result: The drive enable indicator light should turn on and remain on while the boom is anywhere in the range shown.

13 Slowly move the drive control handle off center.

⊙ Result: The drive function should not operate.

14 Rotate the turntable until the boom moves past the other non-steer wheel.

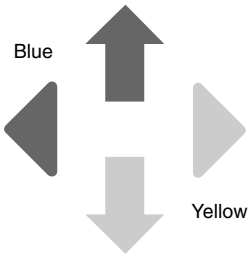
⊙ Result: The drive enable indicator light should come on and remain on while the boom is anywhere in the range shown.

15 Move and hold the drive enable toggle switch to either side and slowly move the drive control handle off center.

⊙ Result: The drive function should operate.

⚠WARNING Collision hazard. Always use the color-coded direction arrows on the platform controls and the drive chassis to identify the direction of travel.

NOTICE When the drive enable system is in use, the machine may drive in the opposite direction that the drive and steer control handle is moved.



A-18
Drain the Fuel Filter/ Water Separator - Diesel Models

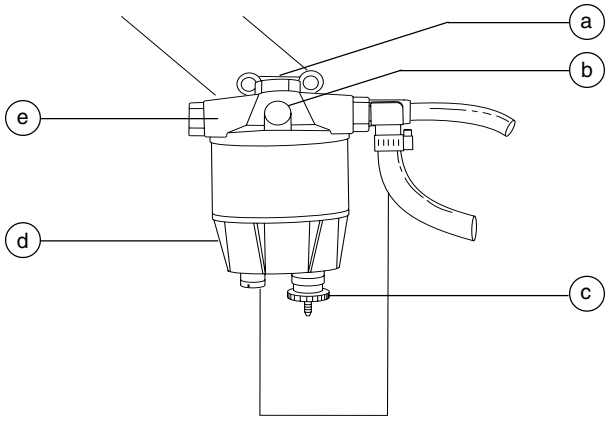
Proper maintenance of the fuel filter/water separator is essential for good engine performance. Failure to perform this procedure can lead to poor engine performance and component damage.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Perform this procedure with the engine off.

1 Open the engine side turntable cover and locate the fuel filter/water separator.

2 Loosen the vent plug located on the fuel filter/ water separator head.



a head bolt
b vent plug
c drain plug
d filter bowl
e separator head

3 Loosen the drain plug located at the bottom of the bowl. Allow the water to drain into a suitable container until fuel starts to come out. Immediately tighten the drain plug.

4 Tighten the vent plug.

NOTICE If the fuel filter/water separator is completely drained, you must prime the fuel filter/water separator before starting the engine. See C-3, *Replace The Fuel Filter/ Water Separator Element - Diesel Models,* for instructions on how to prime the fuel filter/water separator.

5 Clean up any fuel that may have spilled.

6 Start the engine from the ground controls and check the fuel filter/water separator and vent plug for leaks.

⚠DANGER Explosion and fire hazard. If a fuel leak is discovered, keep any additional personnel from entering the area and do not operate the machine. Repair the leak immediately.

A-19
Perform 30 Day Service

The 30 day maintenance procedure is a one time sequence of procedures to be performed after the first 30 days or 40 hours of usage. After this interval, refer to the maintenance checklists for continued scheduled maintenance.

1 Perform the following maintenance procedures:

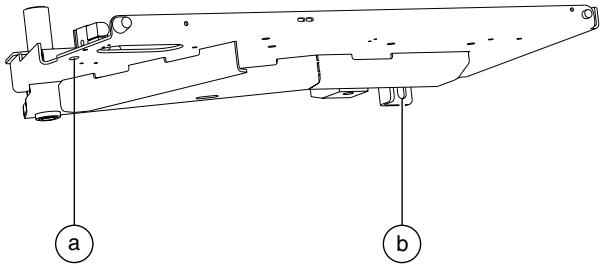
- A-20 Check the Engine Fasteners - Deutz Models
- A-25 Grease the Turntable Rotation Bearing and Rotate Gear
- B-2 Check the Engine Belt - Deutz and Perkins Models
- B-5 Replace the Hydraulic Filters
- B-8 Check the Oil Level in the Drive Hubs
- C-1 Check the Engine Valve Clearances - Deutz Models
- C-6 Replace the Engine Oil and Filter - Deutz and Perkins Models
- D-4 Check the Turnable Rotation Bearing Bolts
- D-6 Replace the Fuel Filter - Deutz Models
- D-9 Check the Engine Valve Clearances - Perkins Models

A-20
Check the Engine Fasteners - Deutz Models

NOTICE Engine specifications require that this one time procedure be performed after the first 40 hours of use.

Properly torqued engine fasteners are essential to good engine performance and operational safety. Loose or improperly torqued fasteners can result in engine component damage and hazardous conditions.

1 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



a engine pivot plate anchor hole
b engine pivot plate retaining fastener

2 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.

3 Locate the engine pivot plate anchor hole on the turntable.

4 Install the bolt that was just removed through the engine pivot plate and into the anchor hole to secure the engine pivot plate from moving.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

5 Tighten all valve cover retaining fasteners. Torque to 108 in-lbs / 12 Nm.

6 Tighten all air intake pipe clamps. Torque to 108 in-lbs / 12 Nm.

7 Tighten all intake manifold retaining fasteners. Torque to 17 ft-lbs / 23 Nm.

8 Tighten all exhaust manifold retaining fasteners. Torque to 30 ft-lbs / 40 Nm.

9 Tighten all engine mounting fasteners. Torque engine to bracket mounting fasteners to 54 ft-lbs / 73 Nm and bracket to engine pivot plate mounting fasteners to 175 ft-lbs / 237 Nm.

10 Remove the engine pivot plate retaining fastener from the engine pivot plate anchor hole.

11 Swing the engine pivot plate in towards the machine.

12 Install the bolt that was just removed into the original hole to secure the engine pivot plate.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

CHECKLIST A PROCEDURES REV B

A-21
Inspect the Radiator, Liquid-cooled Models

NOTICE Engine specifications require that this procedure be performed every 100 hours. Perform this procedure more often if dusty conditions exist.

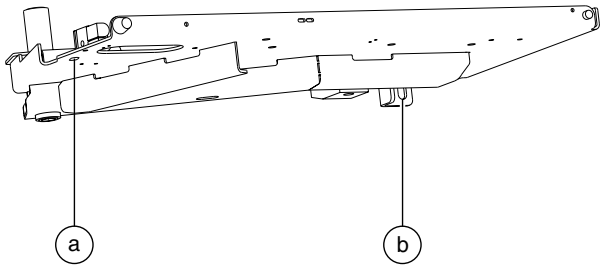
Maintaining the radiator in good condition is essential for good engine performance. Operating a machine with a damaged or leaking radiator may result in engine damage. Also, restricting air flow through the radiator (i.e., dirt or debris) will affect the performance of the cooling system. A frequent check allows the inspector to identify changes in the condition of the radiator that might indicate cooling system problems.

⚠WARNING Bodily injury hazard. Do not inspect while the engine is running. Remove the key to secure from operation.

⚠CAUTION Burn hazard. Beware of hot engine parts and coolant. Contact with hot engine parts and/or coolant may cause severe burns.

1 Open the engine side turntable cover.

2 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



a engine pivot plate anchor hole
b engine pivot plate retaining fastener

3 Locate the engine pivot plate anchor hole on the turntable.

4 Install the bolt that was just removed through the engine pivot plate and into the anchor hole to secure the engine pivot plate from moving.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

5 Inspect the radiator for leaks and physical damage.

6 Clean the radiator fins of debris and foreign materials.

7 Inspect all radiator hoses and connections.

8 Remove the engine pivot plate retaining fastener from the engine pivot plate anchor hole.

9 Swing the engine pivot plate in towards the machine.

10 Install the bolt that was just removed into the original hole to secure the engine pivot plate.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

A-22
Check the Alternator Belt - GM Models

NOTICE Engine specifications require that this procedure be performed every 100 hours. Perform this procedure more often if dusty conditions exist.

Maintaining the alternator belt is essential to good engine performance and service life. The machine will not operate properly with a loose or defective belt and continued use may cause component damage.

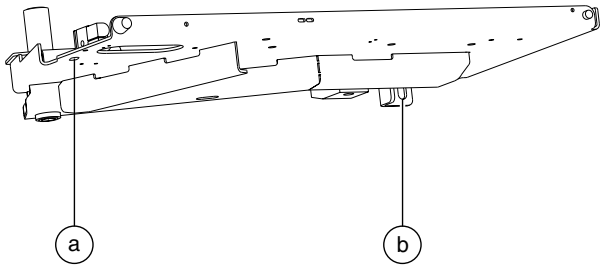
⚠WARNING Bodily injury hazard. Do not inspect while the engine is running. Remove the key to secure from operation.

⚠CAUTION Burn injury hazard. Beware of hot engine components. Contact with hot engine components may cause severe burns.

1 Open the engine side turntable cover.

CHECKLIST A PROCEDURES REV B

2 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



a engine pivot plate anchor hole
b engine pivot plate retaining fastener

3 Locate the engine pivot plate anchor hole on the turntable.

4 Install the bolt that was just removed through the engine pivot plate and into the anchor hole to secure the engine pivot plate from moving.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

5 Inspect the alternator belt for:

- Cracking
- Glazing
- Separation
- Breaks

6 Replace the belt if any damage is found.

7 Remove the engine pivot plate retaining fastener from the engine pivot plate anchor hole.

8 Swing the engine pivot plate in towards the machine.

9 Install the bolt that was just removed into the original hole to secure the engine pivot plate.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

Belt deflection - GM models	1/2 inch 12 mm

Alternator belt	
Genie part number	65621

A-23
Inspect the Electrical Wiring

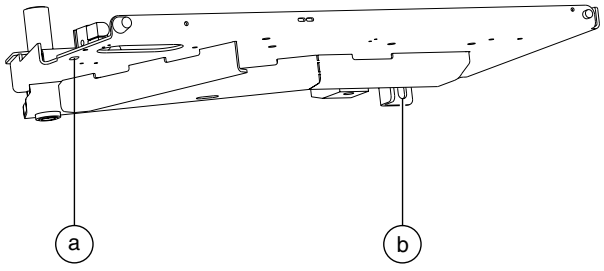
NOTICE Genie specifications require that this procedure be performed every 100 hours.

Maintaining electrical wiring in good condition is essential to safe operation and good machine performance. Failure to find and replace burnt, chafed, corroded or pinched wires could result in unsafe operating conditions and may cause component damage.

⚠WARNING Electrocution hazard. Contact with hot or live circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

1 Open the engine side turntable cover.

2 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



a engine pivot plate anchor hole
b engine pivot plate retaining fastener

3 Locate the engine pivot plate anchor hole on the turntable.

4 Install the bolt that was just removed through the engine pivot plate and into the anchor hole to secure the engine pivot plate from moving.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

5 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:

- Engine wiring harness
- Hydraulic manifold wiring

6 Open the ground controls side turntable cover.

7 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:

- Inside of the ground control box
- Hydraulic manifold wiring

8 Start the engine from the ground controls and raise the boom above the turntable covers.

9 Remove the center turntable cover fasteners. Remove the cover.

10 Inspect the turntable area for burnt, chafed and pinched cables.

11 Install the center turntable cover and fasteners.

12 Lower the boom to the stowed position and turn the engine off.

CHECKLIST A PROCEDURES REV B

13 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:

- Cable track on the boom
- Cables on the boom and jib boom
- Jib boom/platform rotate manifold (S-85)
- Inside of the platform control box

14 Remove the engine pivot plate retaining fastener from the engine pivot plate anchor hole.

15 Swing the engine pivot plate in towards the machine.

16 Install the bolt that was just removed into the original hole to secure the engine pivot plate.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

A-24
Check the Batteries

NOTICE Genie specifications require that this procedure be performed every 100 hours.

Proper battery condition is essential to good engine performance and operational safety. Improper fluid levels or damaged cables and connections can result in engine component damage and hazardous conditions.

⚠WARNING Electrocution hazard. Contact with hot or live circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

⚠WARNING Bodily injury hazard. Batteries contain acid. Avoid spilling or contacting battery acid. Neutralize battery acid spills with baking soda and water.

1 Put on protective clothing and eye wear.

2 Be sure that the battery cable connections are secure and free of corrosion.

3 Be sure that the battery hold down brackets are in place and secure.

4 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer.

⊙ Result: If any battery cell displays a specific gravity of less than 1.026, the battery must be replaced.

5 Check the battery acid level of each cell. If needed, replenish with distilled water to the bottom of each battery fill tube. Do not overfill.

6 Install the battery vent caps.

NOTICE Applying a corrosion preventative sealant will help eliminate corrosion on the battery terminals and cables.

A-25
Grease the Turntable Rotation Bearing and Rotate Gear

NOTICE Genie specifications require that this procedure be performed every 100 hours of operation. Perform this procedure more often if dusty conditions exist.

Frequent application of lubrication to the turntable bearing and rotate gear is essential to good machine performance and service life. Continued use of an improperly greased bearing and gear will result in component damage.

1 Locate the grease fitting on the platform end of the tank side bulkhead.

2 Pump grease into the turntable rotation bearing. Rotate the turntable in increments of 4 to 5 inches / 10 to 13 cm at a time and repeat this step until the entire bearing has been greased.

3 Apply grease to each tooth of the drive gear, located under the turntable.

Grease type	Multipurpose grease

CHECKLIST A PROCEDURES REV B

A-26
Replace the Drive Hub Oil

NOTICE Specifications require that this procedure be performed after 150 hours.

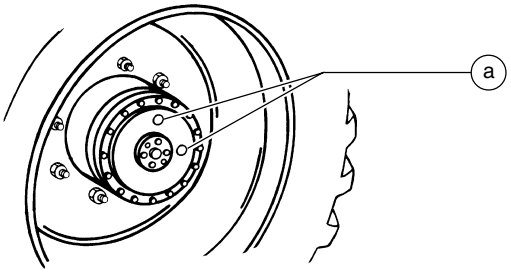
Replacing the drive hub oil is essential for good machine performance and service life. Failure to replace the drive hub oil at yearly intervals may cause the machine to perform poorly and continued use may cause component damage.

Drive Hubs:

1 Select the drive hub to be serviced. Drive the machine until one of the two plugs is at the lowest point.

2 Remove both plugs and drain the oil into a suitable container.

3 Drive the machine until one plug is at the top and the other is at 90 degrees.



4 Fill the hub with oil from the top hole until the oil level is even with the bottom of the side hole. Install the plugs.

5 Repeat this procedure for each drive hub.

Drive hubs	
Capacity	61 fl oz 1.8 liters
Type:	SAE 90 multipurpose hypoid gear oil API service classification GL5

Turntable Rotate Drive Hub:

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Secure the turntable from rotating with the turntable rotation lock pin.

NOTICE The turntable rotation lock pin is located next to the boom rest pad.

2 Tag, disconnect and plug the hydraulic hoses from the turntable rotate drive motor. Cap the fittings on the drive motor.

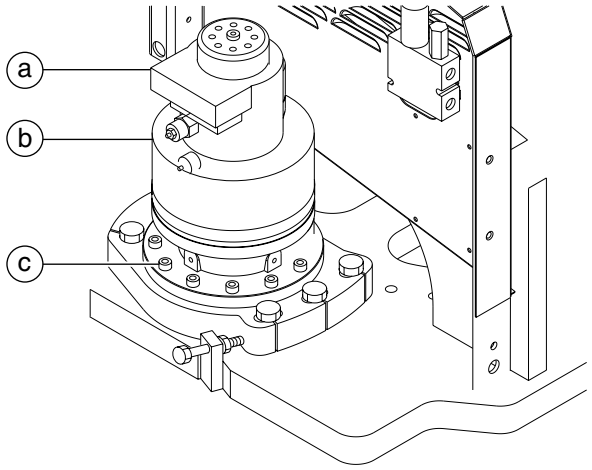
3 Attach a suitable lifting device to the lifting eyes located near the drive motor.

REV B CHECKLIST A PROCEDURES

4 Remove the drive hub mounting bolts. Carefully remove the turntable rotate drive hub assembly from the machine.

⚠WARNING Crushing hazard. The turntable rotate drive hub assembly could become unbalanced and fall if not properly supported by the lifting device.

5 Remove the plug from the side of the drive hub. Drain the oil from the hub into a suitable container.



a motor
b drive hub
c drive hub mounting bolts

6 Install the drive hub assembly onto the machine. Torque the drive hub mounting bolts to 75 ft-lbs / 101.7 Nm.

7 Fill the drive hub with oil from the side hole until the oil level is even with the bottom of the hole. Apply pipe thread sealant to the plug. Install the plug.

8 Adjust turntable rotation gear backlash. Refer to Repair Procedure 11-1, *How to Adjust the Turntable Rotation Gear Backlash.*

Turntable rotate drive hub	
Oil capacity	32 fl oz 0.95 liters
Type:	SAE 90 multipurpose hypoid gear oil API service classification GL5

CHECKLIST A PROCEDURES REV B

A-27
Replace the Engine Oil and Filter - GM Models

NOTICE GM engine specifications require that this procedure be performed every 200 hours. Perform this procedure more often if dusty conditions exist or the machine is subjected to extended low idle operation.

Periodic replacement of the engine oil and filter is essential to good engine performance. Operating the machine with an improper oil level or neglecting periodic oil and filter changes can damage engine components. A daily check of machine hours against the hours noted on the oil filter will allow the inspector to anticipate and perform oil and filter changes at the 200 hour interval.

⚠CAUTION Burn hazard. Beware of hot engine parts and oil. Contact with hot engine oil and/or engine parts may cause severe burns.

1 Open the engine side turntable cover and remove the oil filler cap.

2 Pull the oil drain hose out from underneath the engine.

3 Remove the plug from the end of the drain hose and allow all of the oil from the engine to drain into a suitable container. See capacity specifications.

4 Install the plug into the drain hose and tighten.

5 Place a suitable container under the oil filter.

6 Use an oil filter wrench and remove the filter.

7 Apply a thin layer of fresh oil to the gasket of the new oil filter. Install the filter and tighten it securely by hand.

Oil filter	
Genie part number	65623

8 Use a permanent ink marker to write the date and number of hours from the hour meter on the oil filter.

9 Fill the engine with new oil per specifications and install the filler cap. See capacity specifications.

10 Start the engine from the ground controls. Allow the engine to run for 30 seconds, then turn the engine off.

11 Check the oil filter and oil drain hose for leaks.

12 Check the engine oil level dipstick. Add oil if needed.

13 Clean up any oil that may have spilled. Properly dispose of the oil and filter.

GM 3.0L EFI Engine	5 quarts
Oil capacity (including filter)	4.7 liters

Oil viscosity requirements	
Below 0°F / -17.8°C	5W-30
Above 0°F / -17.8°C	10W-30

Only use engine oils labeled **"For Gasoline Engines"** by the American Petroleum Institute (API).

REV B CHECKLIST A PROCEDURES

A-28
Replace the Fuel Filter - GM Models

NOTICE GM engine specifications require that this procedure be performed every 200 hours.

Replacing the gasoline fuel filter is essential to good engine performance and service life. A dirty or clogged filter may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the filter be replaced more often.

⚠ DANGER Explosion and fire hazard. Engine fuels are combustible. Replace the fuel filter in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Perform this procedure with the engine off.

1 Open the ground controls side turntable cover and locate the fuel filter behind the ground control box.

2 Turn the manual shutoff valve, located at the fuel tank, to the closed position (if equipped).

3 At the fuel filter, tag and disconnect and plug the fuel supply hose that goes to the fuel tank. Clean up and fuel that may have spilled.

4 Tag and disconnect and plug the fuel hose from the fuel filter to the fuel pump. Remove the fuel filter.

5 Install the new fuel fuel filter and connect the fuel hoses to the filter.

Fuel filter	
Genie part number	65626

6 Clean up any fuel that may have spilled during the installation procedure.

7 Turn the manual shutoff valve, located at the fuel tank, to the open position (if equipped).

8 Start the machine from the ground controls and inspect the fuel filters and hoses for leaks.

9 Properly dispose of the used fuel filter.

⚠ DANGER Explosion and fire hazard. If a fuel leak is discovered, keep any additional personnel from entering the area and do not operate the machine. Repair the leak immediately.

Checklist B Procedures

REV A

B-1
Check the Engine Oil Cooler and Cooling Fins - Deutz Models

Maintaining the oil cooler in good condition is essential for good engine performance. Operating a machine with a damaged oil cooler may result in engine damage. Also, restricting air flow through the oil cooler will affect the performance of the cooling system.

⚠WARNING Bodily injury hazard. Do not inspect while the engine is running. Remove the key to secure from operation.

⚠CAUTION Burn hazard. Beware of hot engine components. Contact with hot engine components may cause severe burns.

Engine oil cooler

1 Open the latches from the engine side cover. Remove the cover.

2 Inspect the oil cooler for leaks and physical damage.

3 Clean the oil cooler of debris and foreign material.

Head cooling and blower fins

4 Inspect the fan blower fins for physical damage.

5 Clean the fan blower fins of debris and foreign material.

6 Using a flashlight, inspect the head cooling passages and fins for physical damage or foreign material.

7 If needed, clean the cylinder head cooling passages and fins of debris and foreign material.

REV A CHECKLIST B PROCEDURES

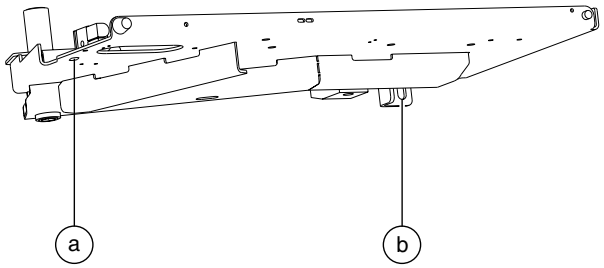
B-2
Check the Engine Belt - Deutz and Perkins Models

Maintaining the engine belt(s) is essential to good engine performance and service life. The machine will not operate properly with a loose or defective belt and continued use may cause component damage.

⚠WARNING Bodily injury hazard. Do not inspect while the engine is running. Remove the key to secure from operation.

⚠CAUTION Burn injury hazard. Beware of hot engine components. Contact with hot engine components may cause severe burns.

1 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



a engine pivot plate anchor hole
b engine pivot plate retaining fastener

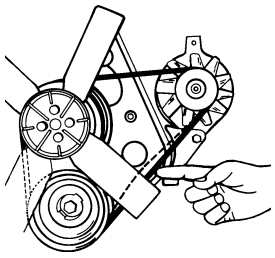
2 Locate the engine pivot plate anchor hole on the turntable.

3 Install the bolt that was just removed through the engine pivot plate and into the anchor hole to secure the engine pivot plate from moving.

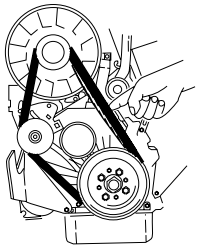
⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

4 Inspect the engine belt for:

- Cracking
- Glazing
- Separation
- Breaks



Perkins engine



Deutz engine

5 Replace the belt if any damage is found.

6 Remove the engine pivot plate retaining fastener from the engine pivot plate anchor hole.

CHECKLIST B PROCEDURES REV A

7 Swing the engine pivot plate in towards the machine.

8 Install the bolt that was just removed into the original hole to secure the engine pivot plate.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

Belt deflection	
Deutz models	3/8 inch to 1/2 inch 9 mm to 12 mm
Perkins models	3/8 inch 9 mm

Belts - Genie part numbers	
Deutz engine belt	62431
Perkins engine belt	62423

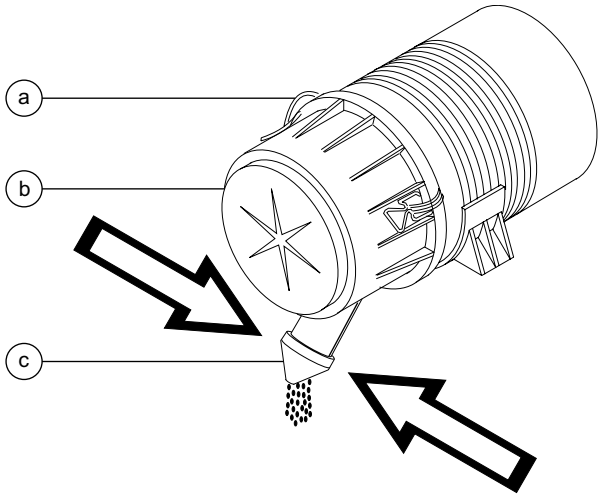
B-3
Replace the Engine Air Filter Element

NOTICE Perform this procedure more often if dusty conditions exist.

Maintaining the engine air filter in good condition is essential to good engine performance and service life. Failure to perform this procedure can lead to poor engine performance and component damage.

NOTICE Perform this procedure with the engine off.

1 Open the engine side cover. Empty the dust discharge valve by pressing together the sides of the discharge slot. Clean the discharge slot as needed.



a clamp
b canister end cap
c dust discharge valve

2 Release the clamps from the end cap of the air filter canister. Remove the end cap.

3 Remove the filter element.

4 Clean the inside of the canister and the canister end cap with a damp cloth.

5 Install the the new air filter element.

Air filter element - Genie part numbers	
Deutz models	62425
GM and Perkins models	62420

6 Install the end cap onto the canister. Secure the clamps.

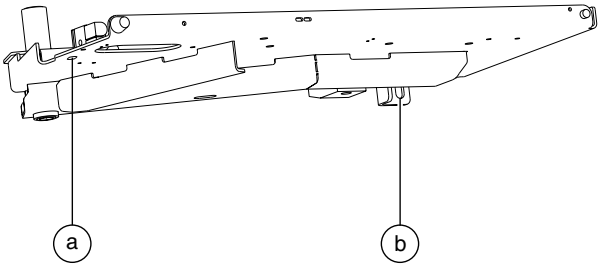
B-4
Check the Exhaust System

Maintaining the exhaust system is essential to good engine performance and service life. Operating the engine with a damaged or leaking exhaust system can cause component damage and unsafe operating conditions.

⚠WARNING Bodily injury hazard. Do not inspect while the engine is running. Remove the key to secure from operation.

⚠CAUTION Bodily injury hazard. Beware of hot engine components. Contact with hot engine components may cause severe burns.

1 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



a engine pivot plate anchor hole
b engine pivot plate retaining fastener

2 Locate the engine pivot plate anchor hole on the turntable.

3 Install the bolt that was just removed through the engine pivot plate and into the anchor hole to secure the engine pivot plate from moving.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

4 Be sure that all nuts and bolts are tight.

5 Inspect all welds for cracks.

6 Inspect for exhaust leaks (i.e., carbon buildup) around seams and joints.

7 Remove the engine pivot plate retaining fastener from the engine pivot plate anchor hole.

8 Swing the engine pivot plate in towards the machine.

9 Install the bolt that was just removed into the original hole to secure the engine pivot plate.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

B-5
Replace the Hydraulic Filters

NOTICE Perform this procedure more often if dusty conditions exist.

Replacement of the hydraulic filters is essential for good machine performance and service life. A dirty or clogged filter may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the filter be replaced more often.

⚠CAUTION Bodily injury hazard. Beware of hot oil. Contact with hot oil may cause severe burns.

NOTICE Perform this procedure with the engine off.

Hydraulic return filter

1 Open the ground controls side turntable cover and locate the hydraulic return filter mounted on the hydraulic tank.

2 Place a suitable container under the hydraulic tank return filter.

3 Remove the filter with an oil filter wrench.

4 Apply a thin layer of fresh oil to the gasket of the new oil filter.

Hydraulic return filter	
Genie part number	61326

5 Install the new filter and tighten it securely by hand. Clean up any oil that may have spilled during the installation procedure.

6 Use a permanent ink marker to write the date and number of hours from the hour meter on the oil filter.

Medium and high pressure filters

NOTICE The medium pressure filter is for the charge pump and the high pressure filter is for all machine functions except the drive circuit and oscillating axle circuit.

7 Open the engine side turntable cover and locate the two filters mounted below the hydraulic pumps.

NOTICE The medium pressure filter is located on the right. The high pressure filter is located on the left with the condition indicator.

8 Place a suitable container under the filters.

9 Remove the filter housing by using a wrench on the nut provided on the bottom of the housings.

10 Remove the filter element from the housings.

11 Inspect the housing seals and replace them if necessary.

12 Install the new medium and high pressure filter elements into the housings and tighten them securely.

Medium and high pressure filters	
Genie part number	60857

13 Clean up any oil that may have spilled during the installation procedure.

14 Use a permanent ink marker to write the date and number of hours from the hour meter on the oil filter housings.

15 Start the engine from the ground controls.

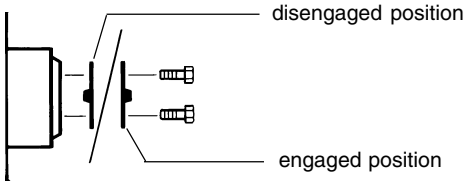
16 Inspect the filter housings and related components to be sure that there are no leaks.

CHECKLIST B PROCEDURES REV A

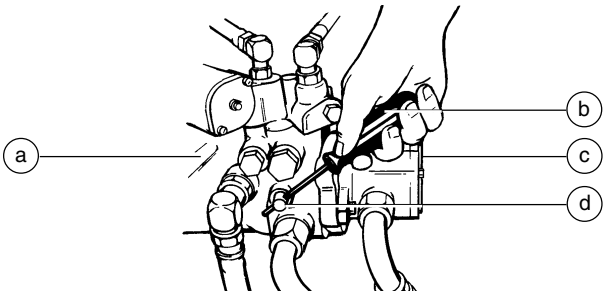
B-6
Confirm the Proper Brake Configuration

Proper brake configuration is essential to safe operation and good machine performance. Hydrostatic brakes and hydraulically-released, spring-applied individual wheel brakes can appear to operate normally when they are actually not fully operational.

1 Check each drive hub disconnect cap to be sure it is in the engaged position.



2 Be sure the free-wheel valve is closed (clockwise).



a drive pump
b screwdriver
c lift pump
d free-wheel valve

NOTICE The free-wheel valve is located on the drive pump.

NOTICE The free-wheel valve should always remain closed.

B-7
Inspect the Tires and Wheels (including lug nut torque)

Maintaining the tires and wheels in good condition is essential to safe operation and good performance. Tire and/or wheel failure could result in a machine tip-over. Component damage may also result if problems are not discovered and repaired in a timely fashion.

⚠WARNING Bodily injury hazard. An over-inflated tire can explode and could result in death or serious injury.

⚠WARNING Tip-over hazard. Do not use temporary flat tire repair products.

NOTICE The tires on some machines are foam filled and do not need air added to them.

1 Check all tire treads and sidewalls for cuts, cracks, punctures and unusual wear.

2 Check each wheel for damage, bends and cracked welds.

3 Check each lug nut for proper torque.

4 Check the pressure in each air-filled tire. Add air as necessary.

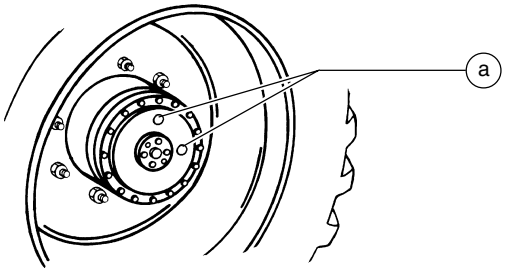
Tires and wheels	
Tire size	15-22.5 SAT 385/65-22.5
Pressure	100 psi 6.9 bar
Tire ply rating	16
Wheel lugs	10 @ 3/4 -16
Lug nut torque, dry	420 ft-lbs 569.5 Nm
Lug nut torque, lubricated	320 ft-lbs 433.9 Nm

B-8
Check the Oil Level in the Drive Hubs

Failure to maintain proper drive hub oil levels may cause the machine to perform poorly and continued use may cause component damage.

Drive Hubs

1 Drive the machine to rotate the hub until the plugs are located one on top and the other at 90 degrees.



a drive hub plugs

2 Remove the plug located at 90 degrees and check the oil level.

⊙ Result: The oil level should be even with the bottom of the side plug hole.

3 If necessary, remove the top plug and add oil until the oil level is even with the bottom of the side plug hole.

4 Apply pipe thread sealant to the plug(s) and install the plug(s) in the drive hub.

5 Repeat this procedure for each drive hub.

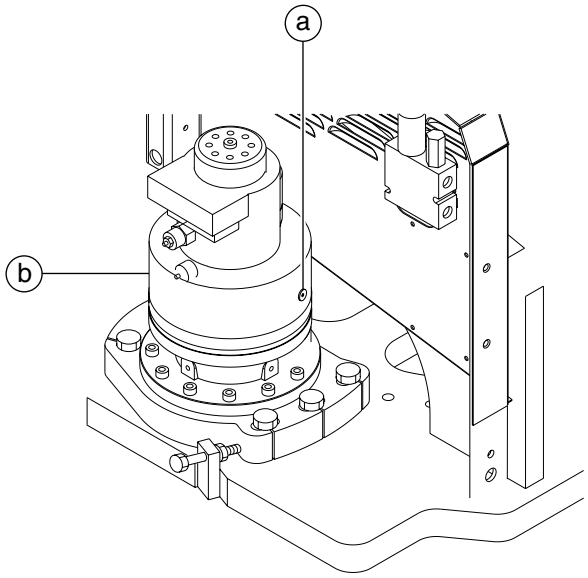
Drive hub oil

Capacity	61 fl oz 1.8 liters
Type:	SAE 90 multipurpose hypoid gear oil API service classification GL5

Turntable Rotate Drive Hub

1 Remove the plug located on the side of the hub and check the oil level.

⊙ Result: The oil level should be even with the bottom of the plug hole.



a plug
b drive hub

2 If necessary, add oil until the oil level is even with the bottom of the plug hole.

3 Apply pipe thread sealant to the plug, and install the plug in the drive hub.

Turntable rotate drive hub oil

Capacity	32 fl oz 0.95 liters
Type:	SAE 90 multipurpose hypoid gear oil API service classification GL5

CHECKLIST B PROCEDURES REV A

B-9
Check and Adjust the Engine RPM

Maintaining the engine rpm at the proper setting for both low and high idle is essential to good engine performance and service life. The machine will not operate properly if the rpm is incorrect and continued use may cause component damage.

GM models

NOTICE The engine rpm is controlled by the ECM and can only be adjusted by re-programming the ECM. If rpm adjustment or service is required, please contact the Genie Industries Service Department OR your local GM dealer.

GM models	
Low idle	1650 rpm
High idle	2300 rpm

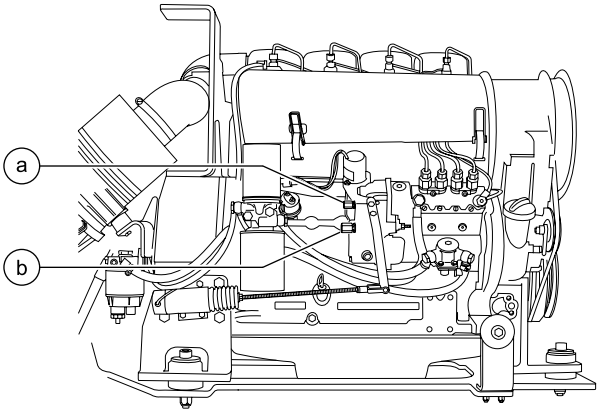
Deutz models

1 Connect a tachometer to the engine. Start the engine from the ground controls.

⊙ Result: Low idle should be 1300 rpm.

Skip to step 10 if the low idle rpm is correct.

2 Remove the secondary idle adjustment screw cap from the secondary idle adjustment screw on the injection pump. Loosen the locknut.



Deutz engine
a primary idle adjustment screw
b secondary idle adjustment screw

3 Turn the secondary adjustment screw counterclockwise until the adjustment screw is loose. Tighten the locknut.

NOTICE Be sure the adjustment screw is loosened until there is no spring tension felt.

4 Remove the primary idle adjustment screw cap from the primary idle adjustment screw on the injection pump. Loosen the locknut.

5 Adjust the primary idle adjustment screw until low idle is 1250 rpm. Tighten the locknut.

6 Install the primary idle adjustment screw cap and tighten. Do not over tighten.

7 Loosen the secondary idle adjustment screw locknut.

8 Adjust the secondary adjustment screw until the low idle is 1300 rpm. Tighten the locknut.

9 Install the secondary idle adjustment screw cap and tighten. Do not over tighten.

10 Move the function enable/rpm select toggle switch to the high idle (rabbit symbol) position.

⊙ Result: High idle should be 2300 rpm.

If the high idle is correct, disregard adjustment step 11.

11 Loosen the yoke lock nut. Turn the high idle adjustment nut and solenoid boot counterclockwise to increase the rpm or clockwise to decrease the rpm. Tighten the yoke lock nut and recheck the rpm.

NOTICE Be sure the solenoid fully retracts when activating high idle.

Deutz models	
Low idle	1300 rpm
High idle	2300 rpm

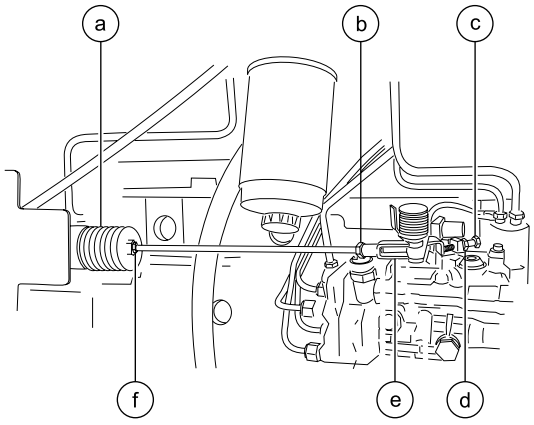
Perkins models

1 Connect a tachometer to the engine. Start the engine from the ground controls.

⊙ Result: Low idle should be 1600 rpm.

Skip to step 3 if the low idle rpm is correct.

2 Loosen the low idle lock nut. Turn the low idle adjustment screw clockwise to increase the rpm or counterclockwise to decrease the rpm. Tighten the low idle lock nut and confirm the rpm.



Perkins models
a solenoid boot
b yoke lock nut
c low idle adjustment screw
d low idle lock nut
e yoke
f high idle adjustment nut

3 Move the function enable/rpm select toggle switch to the high idle (rabbit symbol) position.

⊙ Result: High idle should be 2300 rpm.

If high idle rpm is correct, disregard adjustment step 4.

4 Loosen the yoke lock nut. Turn the high idle adjustment nut and solenoid boot counterclockwise to increase the rpm or clockwise to decrease the rpm. Tighten the yoke lock nut and recheck the rpm.

NOTICE Be sure the solenoid fully retracts when activating high idle.

Perkins models	
Low idle	1600 rpm
High idle	2300 rpm

B-10
Test the Key Switch

Proper key switch action and response is essential to safe machine operation. The machine can be operated from the ground or platform controls and the activation of one or the other is accomplished with the key switch. Failure of the key switch to activate the appropriate control panel could cause a hazardous operating situation.

1 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Turn the key switch to ground control, start the engine and then turn the key switch to **platform control**.

3 Check all machine function from the **ground controls**.

⊙ Result: All machine functions should **not** operate.

4 Turn the key switch to ground control.

5 Check all machine function from the **platform controls**.

⊙ Result: All machine functions should **not** operate.

6 Turn the key switch to the off position.

⊙ Result: The engine should stop and no functions should operate.

REV A CHECKLIST B PROCEDURES

B-11
Test the Emergency Stop

A properly functioning Emergency Stop is essential for safe machine operation. An improperly operating red Emergency Stop button will fail to shut off power and stop all machine functions, resulting in a hazardous situation.

NOTICE As a safety feature, selecting and operating the ground controls will override the platform controls, including the platform red Emergency Stop button.

1 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Start the engine from ground controls.

3 Push in the red Emergency Stop button at the ground controls to the off position.

⊙ Result: The engine should shut off and no machine functions should operate.

4 Pull out the red Emergency Stop button to the on position at the ground controls.

5 Turn the key switch to platform control and start the engine from platform controls.

6 Push in the red Emergency Stop button at the platform controls to the off position.

⊙ Result: The engine should shut off and no machine functions should operate.

NOTICE The red Emergency Stop button at the ground controls will stop all machine operation, even if the key switch is turned to platform control.

B-12
Test the Ground Control Override

A properly functioning ground control override is essential to safe machine operation. The ground control override function is intended to allow ground personnel to operate the machine from the ground controls whether or not the red Emergency Stop button at the platform controls is in the ON or OFF position. This function is particularly useful if the operator at the platform controls cannot return the boom to the stowed position.

1 Push in the red Emergency Stop button at the platform controls to the off position.

2 Start the engine from the ground controls.

3 At the ground controls, operate each boom function through a partial cycle.

⊙ Result: All boom functions should operate.

NOTICE The boom will not raise past horizontal and the boom will not extend more than 12 inches / 30.5 cm unless both axles are fully extended.

CHECKLIST B PROCEDURES REV A

B-13
Test the Platform Self-leveling

Automatic platform self-leveling throughout the full cycle of boom raising and lowering is essential for safe machine operation. The platform is maintained at level by the platform leveling slave cylinder which operates in a closed loop hydraulic circuit with the master cylinder located at the base of the boom.
A platform self-leveling failure creates an unsafe working condition for platform and ground personnel.

1 Start the engine from the ground controls.

2 Hold the function enable toggle switch to either side and adjust the platform to a level position using the platform level toggle switch.

3 Raise and lower the boom through a full cycle.

⊙ Result: The platform should remain level at all times to within ±5 degrees.

NOTICE The boom will not raise past horizontal and the boom will not extend more than 12 inches / 30.5 cm unless both axles are fully extended.

B-14
Test the Horn

A properly functioning horn is essential to safe machine operation. The horn is activated at the platform controls and sounds at the ground as a warning to ground personnel. An improperly functioning horn will prevent the operator from alerting ground personnel of hazards or unsafe conditions.

1 Turn the key switch to platform controls and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Push down the horn button at the platform controls.

⊙ Result: The horn should sound.

REV A CHECKLIST B PROCEDURES

B-15
Test the Foot Switch

A properly functioning foot switch is essential to safe machine operation. Machine functions should activate and operate smoothly as long as the foot switch is pressed down, and promptly stop when the foot switch is released. The foot switch will also shift the engine into high idle if the idle select is switched to the rabbit and foot switch symbol. An improperly functioning foot switch can cause an unsafe working condition and endanger platform and ground personnel.

1 Turn the key switch to platform controls and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Press down the foot switch and attempt to start the engine by moving the start toggle switch to either side.

⊙ Result: The engine should **not** start.

3 Do not press down the foot switch and attempt to start the engine.

⊙ Result: The engine should start.

4 Do not press down the foot switch and attempt to operate the machine functions.

⊙ Result: The machine functions should **not** operate.

5 Press down the foot switch and operate the machine functions.

⊙ Result: The machine functions should operate.

NOTICE The boom will not raise past horizontal and the boom will not extend more than 12 inches / 30.5 cm unless both axles are fully extended.

B-16
Test the Engine Idle Select Operation

A properly operating engine idle select switch is essential to good engine performance and safe machine operation. There are three settings.

Low idle (turtle symbol) allows the operator to control individual boom functions only.

High idle (rabbit symbol) allows the operator to control multiple boom and/or drive functions simultaneously. This setting maintains a consistent high idle.

Foot switch activated high idle (rabbit and foot switch symbols) should be used for normal machine operation. This setting activates high idle only when the foot switch is pressed down.

1 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Start the engine from the ground controls. Move and hold the function enable toggle switch in the high idle (rabbit symbol) position.

⊙ Result: The engine rpm should change to high idle.

3 Release the function enable toggle switch.

⊙ Result: The engine rpm should change to low idle.

4 Turn the key switch to platform controls.

5 At the platform controls, move the engine idle select toggle switch to high idle (rabbit symbol). Do not press down the foot switch.

⊙ Result: The engine rpm should change to high idle.

6 Move the engine idle select toggle switch to low idle (turtle symbol).

⊙ Result: The engine rpm should change to low idle.

7 Move the engine idle select toggle switch to foot switch activated high idle (rabbit and foot switch symbol).

⊙ Result: The engine rpm should **not** change to high idle.

8 Press down the foot switch.

⊙ Result: The engine rpm should change to high idle.

B-17
Test the Fuel Select Operation - GM Models

The ability to select and switch between gasoline and LPG fuels as needed is essential to safe machine operation. A fuel selection can be made whether the engine is running or not. Switching malfunctions and/or the failure of the engine to start and run properly in both fuel modes and through all idle speeds can indicate fuel system problems that could develop into a hazardous situation.

NOTICE Perform this test after checking the gasoline and LPG fuel levels, and warming the engine to normal operating temperature.

1 Move the fuel select toggle switch to gasoline and then move the engine idle select switch to foot switch activated high idle (rabbit and foot switch symbol).

2 Start the engine from the platform controls and allow it to run at low idle.

3 Press down the foot switch to allow the engine to run at high idle.

⊙ Result: The engine should start promptly and operate smoothly in low and high idle.

4 Release the foot switch and shut the engine off by pushing the red Emergency Stop button in to the off position.

5 Move the fuel select toggle switch to LPG.

6 Start the engine and allow it to run at low idle.

7 Press down the foot switch to allow the engine to run at high idle.

⊙ Result: The engine should start promptly and operate smoothly in low and high idle.

NOTICE The engine may hesitate momentarily and then continue to run on the selected fuel if the fuel source is switched while the engine is running.

B-18
Test the Drive Enable System

Proper drive enable system operation is essential to safe machine operation. When the boom is past the non-steering wheels, drive movement is stopped and the indicator light turns on. The drive enable switch must be held to either side to reactivate the drive function and should alert the operator that the machine may move in the opposite direction that the drive and steer controls are moved. An improperly functioning drive enable system may allow the machine to be moved into an unsafe position.

NOTICE Perform this procedure with the boom in the stowed position.

1 Start the engine from the platform controls.

2 Press down the foot switch.

3 Rotate the turntable until the boom moves past one of the the non-steer wheels.

⊙ Result: The drive enable indicator light should turn on and remain on while the boom is anywhere in the range shown.

4 Slowly move the drive control handle off center.

⊙ Result: The drive function should not operate.

5 Rotate the turntable until the boom moves past the other non-steer wheel.

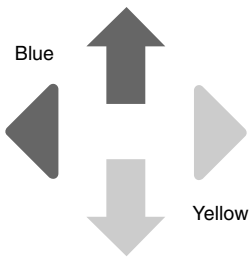
⊙ Result: The drive enable indicator light should come on and remain on while the boom is anywhere in the range shown.

6 Move and hold the drive enable toggle switch to either side and slowly move the drive control handle off center.

⊙ Result: The drive function should operate.

⚠WARNING Collision hazard. Always use the color-coded direction arrows on the platform controls and the drive chassis to identify the direction of travel.

NOTICE When the drive enable system is in use, the machine may drive in the opposite direction that the drive and steer control handle is moved.



CHECKLIST B PROCEDURES REV A

B-19
Test the Drive Brakes

Proper brake action is essential to safe machine operation. The drive brake function should operate smoothly, free of hesitation, jerking and unusual noise. Hydraulically-released individual wheel brakes can appear to operate normally when they are actually not fully operational.

⚠WARNING Collision hazard. Be sure that the machine is not in free-wheel or partial free-wheel configuration. See B-6, *Confirm the Proper Brake Configuration*.

NOTICE Select a test area that is firm, level and free of obstructions.

NOTICE Perform this procedure with the boom in the stowed position.

1 Mark a test line on the ground for reference.

2 Start the engine from the platform controls.

3 Choose a point on the machine (i.e., contact patch of a tire) as a visual reference for use when crossing the test line.

4 Bring the machine to top drive speed before reaching the test line. Release the drive controller when your reference point on the machine crosses the test line.

5 Measure the distance between the test line and your machine reference point.

Braking distance, maximum	
High range on paved surface	3 ft 90 cm

NOTICE The brakes must be able to hold the machine on any slope it is able to climb.

REV A CHECKLIST B PROCEDURES

B-20
Test the Drive Speed - Stowed Position

Proper drive function movement is essential to safe machine operation. The drive function should respond quickly and smoothly to operator control. Drive performance should also be free of hesitation, jerking and unusual noise over the entire proportionally controlled speed range.

NOTICE Select a test area that is firm, level and free of obstructions.

NOTICE Perform this procedure with the boom in the stowed position.

1 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.

2 Start the engine from the platform controls.

3 Choose a point on the machine (i.e., contact patch of a tire) as a visual reference for use when crossing the start and finish lines.

4 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

5 Continue at full speed and note the time when the machine reference point crosses the finish line.

Drive speed, maximum	
Stowed position	3.3 mph 5.3 km/h 40 ft / 8.2 sec 12.2 m / 8.2 sec

B-21
Test the Drive Speed - Raised or Extended Position

Proper drive function movement is essential to safe machine operation. The drive function should respond quickly and smoothly to operator control. Drive performance should also be free of hesitation, jerking and unusual noise over the entire proportionally controlled speed range.

NOTICE Select a test area that is firm, level and free of obstructions.

1 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.

2 Start the engine from the platform controls.

3 Extend the axles.

4 Move the engine idle select toggle switch to foot switch activated high idle (rabbit and foot switch symbol).

5 Press down the foot switch and raise the boom above horizontal.

6 Choose a point on the machine (i.e., contact patch of a tire) as a visual reference for use when crossing the start and finish lines.

7 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

8 Continue at full speed and note the time when the machine reference point crosses the finish line.

9 Press down the foot switch and lower the boom to the stowed position.

10 Extend the boom 3 feet / 90 cm.

11 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the start and finish lines.

12 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

13 Continue at top speed and note the time when the machine reference point crosses the finish line.

Drive speed, maximum	
Raised or extended position	0.68 mph 1.1 km/h 40 ft / 45.5 sec 12.2 m / 45.5 sec

B-22
Test the Alarm Package (if equipped)

The alarm package includes:

- Travel alarm
- Descent alarm
- Flashing beacons

Alarms and beacons are installed to alert operators and ground personnel of machine proximity and motion. The alarm package is installed on the turntable rear cover. Beacons are installed on both turntable covers.

NOTICE The alarms and beacons will operate with the engine running or not running.

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

⊙ Result: Both flashing beacons should be on and flashing.

2 Move and hold the function enable toggle switch to either side and activate the boom toggle switch in the down position, hold for a moment and then release it.

⊙ Result: The descent alarm should sound when the toggle switch is held down.

3 Turn the key switch to platform controls.

⊙ Result: The flashing beacons should be on and flashing.

4 Press down the foot switch. Move the boom controller to the down position, hold for a moment and then release it.

⊙ Result: The descent alarm should sound when the controller is held down.

5 Press down the foot switch. Move the drive controller off center, hold for a moment and then release it. Move the drive controller off center in the opposite direction, hold for a moment and then release it.

⊙ Result: The travel alarm should sound when the drive controller is moved off center in either direction.

B-23
Inspect the Fuel Tank Cap Venting System

NOTICE Genie requires that this procedure be performed quarterly or every 250 hours, whichever comes first. Perform this procedure more often if dusty conditions exist.

A free-breathing fuel tank cap is essential for good engine performance and service life. A dirty or clogged fuel tank cap may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the cap be inspected more often.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Perform this procedure with the engine off.

1 Remove the cap from the fuel tank.

2 Check for proper venting.

NOTICE When checking for positive fuel tank cap venting, air should pass freely through the cap.

⊙ Result: Air should pass through the fuel tank cap. Clean or replace the cap.

3 Using a mild solvent, carefully wash the cap venting system. Dry using low pressure compressed air.

4 Repeat step 2.

5 Install the fuel tank cap onto the fuel tank.

B-24
Perform Hydraulic Oil Analysis

Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil and suction strainers may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require oil changes to be performed more frequently.

NOTICE Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test.**

B-25
Replace the Spark Plugs - GM Models

NOTICE GM engine specifications require that this procedure be performed every 400 hours.

Periodic replacement of the spark plugs is essential to good engine performance and service life. Worn, loose or corroded spark plugs will cause the engine to perform poorly and may result in component damage.

NOTICE Perform this procedure with the engine off.

1 Open the engine side turntable cover.

2 Tag and disconnect the plug wires from the spark plugs by grasping the spark plug boot. Do not pull on the plug wire.

3 Blow out any debris around spark plugs.

4 Remove all the spark plugs from the engine.

5 Adjust the gap on each new spark plug.

6 Install the new spark plugs and torque to 22 ft-lbs / 29.8 Nm.

7 Connect the spark plug wires.

NOTICE Be sure that each spark plug wire is attached to the correct spark plug.

GM 3.0L EFI Engine
Spark plug specifications

Spark plug type	AC Delco ACMR-43-LTS
Spark plug gap	0.040 inch 1.01 mm
Spark plug Genie part number	65622

Checklist C Procedures

REV B

C-1
Check the Engine Valve Clearances - Deutz Models

NOTICE Information to perform this procedure is available in the *Deutz 913 Operation Manual* (Deutz part number 0297 7341)

Deutz 913 Operation Manual	
Genie part number	62446

C-2
Replace the Fuel Filter Element - Perkins Models

Replacing the diesel fuel filter element is essential for good engine performance and service life. A dirty or clogged filter may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions may required that the filter be replaced more often.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Perform this procedure with the engine off.

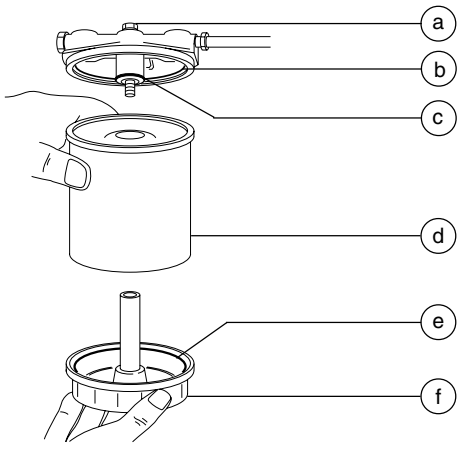
NOTICE Immediately clean up any fuel that may have spilled during this procedure.

1 Open the engine side turntable cover and locate the fuel filter above the oil filter.

2 Thoroughly clean the outside surfaces of the fuel filter assembly.

CHECKLIST C PROCEDURES REV B

3 Hold the bottom cover of the filter element and remove the element retaining screw.



a element retaining screw
b upper seal
c o-ring
d filter element
e lower seal
f bottom cover

4 Lower the bottom cover of the filter.

5 Remove the element and dispose of properly.

6 Clean the inside surfaces of the filter head and the bottom cover.

7 Lightly lubricate the upper seal and the o-ring with clean diesel fuel and install them into the filter head.

8 Lightly lubricate the lower seal with clean diesel fuel and install it into the bottom cover.

9 Put the bottom cover under the new element and hold the element squarely to the filter head. Ensure that the element is fitted in the center against the o-ring in the filter head. With the assembly in this position, install the element retaining screw.

Fuel filter
Genie part number 62421

Bleed the fuel system:

10 Loosen the vent plug on the side of the fuel injection pump.

11 Operate the priming lever of the fuel lift pump until fuel, free from air, comes from the vent plug. Tighten the vent plug.

12 Clean up any fuel that may have spilled during this procedure.

13 Operate the starter motor for intervals of 15 seconds until the engine starts.

NOTICE It is important to allow the starter motor to cool for 30 seconds between each 15 second interval of operation.

NOTICE If the engine runs correctly for a short time and then stops or runs roughly, check for air in the fuel system. If there is air in the fuel system, there is probably a leak in the low pressure side of the system.

C-3
Replace the Fuel Filter/ Water Separator Element - Diesel Models

Replacing the diesel fuel filter/water separator element is essential for good engine performance and service life. A dirty or clogged filter may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the filter be replaced more often.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Perform this procedure with the engine off.

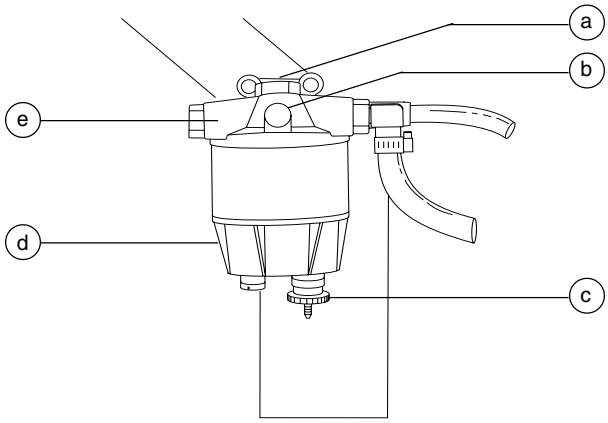
NOTICE Immediately clean up any fuel that may have spilled during this procedure.

1 Open the engine side turntable cover and locate the fuel filter/water separator.

NOTICE The fuel filter/water separator is located near the hydraulic pump.

2 Disconnect and plug the fuel hose from the fuel tank at the fuel filter/water separator head.

3 Loosen the vent plug located on the fuel filter/ water separator head.



a head bolt
b vent plug
c drain plug
d filter bowl
e separator head

4 Place a suitable container under the filter bowl. Loosen the drain plug located at the bottom of the bowl. Completely drain the fuel.

5 Loosen the head bolt. Rotate the filter bowl counterclockwise and remove it from the element.

6 Rotate the filter element counterclockwise and remove it from the filter head and dispose of properly.

7 Install the bowl onto the new filter element.

Fuel filter/water separator	
Genie part number	62433

8 Apply a thin layer of clean diesel fuel onto the element gasket. Install the filter/bowl assembly onto the filter head. Tighten the drain plug.

9 Tighten the head bolt to 65 in-lbs / 7 Nm.

10 Tighten the vent plug.

11 Clean up any diesel fuel that may have spilled during the installation procedure.

12 Connect the fuel hose from the fuel tank to the fuel filter/water separator. Tighten the clamp.

Bleed the fuel system:

NOTICE Before bleeding the system, fill the fuel tank.

13 Loosen the vent plug located on the fuel filter/water separator head.

14 Operate the priming lever of the fuel lift pump until fuel, free from air, comes from the vent plug. Tighten the vent plug.

15 Loosen the air vent screw, located on top of the fuel injection pump.

16 Operate the priming lever of the fuel lift pump until fuel, free from air, comes from the air vent screw.

17 Tighten the air vent screw when air stops coming through the air vent.

18 Clean up any diesel fuel that may have spilled during the bleeding procedure and dispose of properly.

19 Start the engine from ground controls and check for leaks.

C-4
Check the Starting Aid - Perkins Models

NOTICE Information to perform this procedure is available in the *Perkins 704-30 User's Handbook* (Perkins part number TPD 1336 E).

Perkins 704-30 User's Handbook	
Genie part number	101840

REV B CHECKLIST C PROCEDURES

C-5
Check the Specific Gravity of the Engine Coolant, Liquid-cooled Models

The quality of the engine coolant which is used can have a great effect on the efficiency and life of the cooling system. Old or dirty engine coolant may cause the engine to perform poorly and continued use may cause engine damage.

⚠CAUTION Burn hazard. Beware of hot engine parts and coolant. Contact with hot engine parts and/or coolant may cause severe burns.

NOTICE Perform this procedure with the machine on level ground.

NOTICE Perform this procedure with the engine off.

1 Put on protective clothing and eyewear.

2 Operate the engine until it is warm enough to open the thermostat. Continue to run the engine until the coolant has circulated the cooling system.

3 Stop the engine.

4 Allow the engine to cool until the temperature of the coolant is below 140°F / 60°C.

⚠CAUTION Burn hazard. Beware of hot coolant. Contact with hot coolant may cause severe burns.

5 Slowly remove the radiator filler cap. Inspect the cap for wear. Replace as necessary.

⚠CAUTION Burn hazard. Allow any pressure to dissipate gradually before removing the radiator cap.

6 Drain some coolant from the cooling system into a suitable container.

7 Use a coolant hydrometer to check the temperature and specific gravity of the coolant.

8 Adjust the strength of the coolant as necessary for your climate.

9 Install the radiator filler cap.

CHECKLIST C PROCEDURES REV B

C-6
Replace the Engine Oil and Filter - Deutz and Perkins Models

Periodic replacement of the engine oil and filter is essential to good engine performance. Operating the machine with an improper oil level or neglecting periodic oil and filter changes can damage engine components. A frequent check of elapsed machine hours against the hours noted on the oil filter will allow the inspector to anticipate and perform oil and filter changes at the 500 hour interval.

⚠CAUTION Burn hazard. Beware of hot engine parts and oil. Contact with hot engine oil and/or engine parts may cause severe burns.

NOTICE Perform this procedure after warming the engine to normal operating temperature.

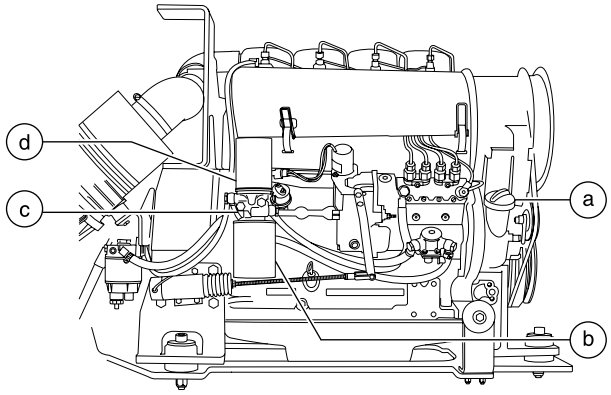
1 Remove the oil filler cap.

2 Pull the oil drain hose out from underneath the engine.

3 Remove the plug from the oil drain hose and allow all of the oil from the engine to drain into a suitable container. See capacity specifications.

4 Install and tighten the plug into the oil drain hose.

5 Use an oil filter wrench to remove the oil filter.



Deutz model
a oil filler cap
b oil filter
c filter head
d fuel filter

6 Clean inside the filter head.

7 Fill the filter with clean engine oil.

8 Apply a thin layer of clean engine oil to the gasket of the new oil filter. Install the filter and tighten it securely by hand.

Oil filter specification - Genie part numbers

Deutz F4L 913	62430
Perkins 704-30	62422

9 Clean up any oil that may have spilled during this procedure.

REV B CHECKLIST C PROCEDURES

10 Use a permanent ink marker to write the date and number of hours from the hour meter on the filter.

11 Fill the engine with new oil per specifications and install the oil filler cap.

12 Start the engine from the ground controls and allow the engine to run for 30 seconds. Stop the engine.

13 Check the oil filter and oil drain hose for leaks.

14 Wait 15 minutes after stopping the engine and check the engine oil level on the dipstick. Add oil if needed.

15 Dispose of the used oil and filter properly.

Deutz F4L 913 Engine	14.3 quarts
Oil capacity (including filter)	13.5 liters
Oil viscosity requirements	
Below 77°F / 25°C	5W-30 (synthetic)
-13°F to 86°F / -25°C to 30°C	10W-40
Above -4°F / -20°C	15W-40
Engine oil should have minimum properties of API classification CD grade OR ACEA classification E1-96.	

Perkins 704-30 Engine	7.4 quarts
Oil capacity (including filter)	7 liters
Oil viscosity requirements	
-13°F to 68°F / -25°C to 20°C	5W-20
5°F to 104°F / -15°C to 40°C	10W-30
Above 14°F / -10°C	15W-40
Engine oil should have minimum properties of API classification CC/SE.	

CHECKLIST C PROCEDURES REV B

C-7
Grease the Platform Overload Mechanism (if equipped)

NOTICE Genie specifications require that this procedure be performed every 500 hours or 6 months, whichever comes first. Perform this procedure more often if dusty conditions exist.

Application of lubrication to the platform overload mechanism is essential to safe machine operation. Continued use of an improperly greased platform overload mechanism could result in the system not sensing an overloaded platform condition and will result in component damage.

1 Locate the grease fittings on each pivot pin of the platform overload assembly.

2 Thoroughly pump grease into each grease fitting using a mulit-purpose grease.

C-8
Test the Platform Overload System (if equipped)

NOTICE Genie specifications require that this procedure be performed every 500 hours or six months.

Testing the platform overload system regularly is essential to safe machine operation. Continued use of an improperly operating platform overload system could result in the system not sensing an overloaded platform condition. Machine stablity could be compromised resulting in the machine tipping over.

NOTICE Perform this procedure with the machine on a firm, level surface.

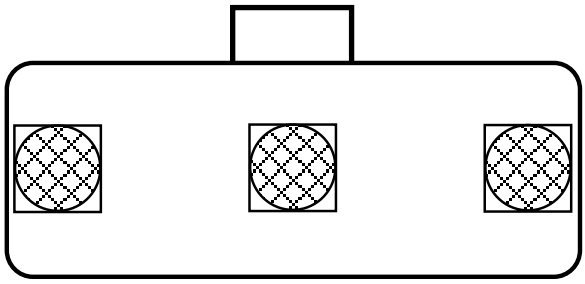
1 Turn the key switch to platform control. Start the engine from the platform controls.

2 Level the platform.

3 Determine the maximum platform capacity. Refer to the machine serial plate.

REV B CHECKLIST C PROCEDURES

4 Using a suitable lifting device, place an appropriate test weight equal to that of the maximum platform capacity in one of the locations shown.



⊙ Result: The platform overload indicator light should be off at both the ground and platform controls.

5 Carefully move the test weight to each remaining location.

⊙ Result: The platform overload indicator light should be off at both the ground and platform controls.

6 Add an additional 66 lbs / 30 kg of weight to overload the platform.

⊙ Result: The alarm should be sounding. The platform overload indicator light should be flashing at both the ground and platform controls.

NOTICE If the alarm does not sound and the platform overload indicator light does not come on with the test weights in any of the platform locations, the platform overload system needs to be calibrated. See D-10, *Calibrate the Platform Overload System*.

NOTICE There may be an approximate 2 second delay before the overload indicator light turns on and the alarm sounds.

7 Carefully move the test weights to each remaining location in the platform.

⊙ Result: The alarm should be sounding. The platform overload indicator light should be flashing at both the ground and platform controls.

NOTICE If the alarm does not sound and the platform overload indicator light does not come on with the test weights in any of the platform locations, the platform overload system needs to be calibrated. See D-10, *Calibrate the Platform Overload System*.

NOTICE There may be an approximate 2 second delay before the overload indicator light turns on and the alarm sounds.

8 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should not operate.

9 Turn the key switch to ground control.

10 Test all machine functions from the ground controls.

⊙ Result: All ground control functions should not operate.

NOTICE Machine functions should still operate with auxiliary power at the ground controls.

11 Lift the test weights off the platform floor using a suitable lifting device.

⊙ Result: The platform overload indicator light and alarm should turn off at both the ground and platform controls.

NOTICE There may be an approximate 2 second delay before the overload indicator light and alarm turn off.

12 Test all machine functions from the ground controls.

⊙ Result: All ground control functions should operate normally.

13 Turn the key switch to platform control.

14 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should operate.

NOTICE If the platform overload system is not operating properly, see D-10, *Calibrate the Platform Overload System.*

C-9
Replace the Engine Coolant - GM Models

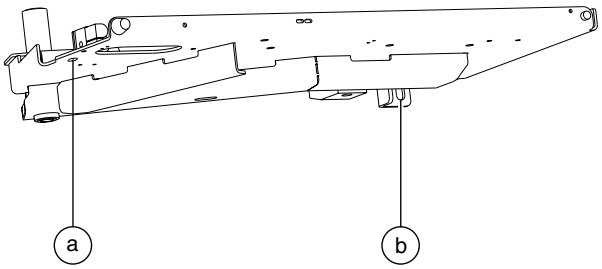
NOTICE GM engine specifications require that this procedure be performed every 800 hours.

Replacing or reconditioning the engine coolant is essential to good engine performance and service life. Old or dirty coolant may cause the engine to perform poorly and continued use may cause engine damage. Extremely dirty conditions may require coolant to be changed more frequently.

⚠CAUTION Burn hazard. Beware of hot engine parts and coolant. Contact with hot engine parts and/or coolant may cause severe burns.

NOTICE Perform this procedure with the engine off and cooled.

1 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



a engine pivot plate anchor hole
b engine pivot plate retaining fastener

2 Locate the engine pivot plate anchor hole on the turntable.

3 Install the bolt that was just removed through the engine pivot plate and into the anchor hole to secure the engine pivot plate from moving.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

4 Put on protective clothing and eye wear.

5 Disconnect the hose from the coolant recovery tank at the radiator and drain the coolant recovery tank into a suitable container.

6 Slowly remove the radiator cap from the radiator.

⚠CAUTION Bodily injury hazard. Allow any pressure to dissipate gradually before removing the radiator cap.

7 Open the drain valve on the radiator and allow all the coolant to drain into a suitable container.

8 After all the coolant has drained, close the drain valve. Connect the hose from the coolant recovery tank to the radiator.

9 Open the drain valve on the engine block and allow the coolant to drain into a suitable container. After the fluid has drained, close the drain valve.

10 Replace all coolant hoses and clamps.

11 Fill the radiator with the proper coolant mixture (coolant and water) for your climate until it is full. Install the radiator cap.

12 Fill the coolant recovery tank to the NORMAL range. Install the coolant recovery tank cap.

13 Clean up any coolant that may have spilled during this procedure.

14 Start the engine from the ground controls and let it run for 30 seconds. Turn the engine off and inspect for leaks.

15 Check the coolant level in the coolant recovery tank. Add coolant if needed.

16 Remove the engine pivot plate retaining fastener from the engine pivot plate anchor hole.

17 Swing the engine pivot plate in towards the machine.

18 Install the bolt that was just removed into the original hole to secure the engine pivot plate.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

19 Start the engine from the ground controls and let it run until it reaches normal operating temperature.

20 Turn the engine off. Allow the engine to cool.

21 Check the coolant level in the coolant recovery tank. Add coolant if needed.

Coolant capacity	
GM 3.0L EFI Engine	12 quarts 11.4 liters

CHECKLIST C PROCEDURES REV B

C-10
Replace the PCV Valve - GM Models

NOTICE GM engine specifications require that this procedure be performed every 800 hours.

Replacement of the PCV valve at the scheduled maintenance interval is essential to good engine performance. A malfunctioning PCV valve can restrict crankcase ventilation and may cause engine damage.

NOTICE Perform this procedure with the engine off.

1 Open the engine side turntable cover.

2 Locate the PCV valve on top of the valve cover. Remove the hose from the PCV valve.

3 Remove the PCV valve from the valve cover. Discard the valve.

4 Install the new PCV valve and connect the hose.

PCV Valve	
Genie part number	65620

C-11
Replace the LPG Filter - GM Models

NOTICE GM engine specifications require that this procedure be performed every 800 hours.

Replacement of the LPG filter at the scheduled maintenance interval is essential to good engine performance. A dirty or clogged filter may cause the engine to perform poorly and continued use may cause component damage.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Inspect the machine in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Perform this procedure with the engine off.

1 Open the ground controls side turntable cover.

2 Move the fuel select toggle switch to the LPG position at the ground controls.

3 Start the engine from the ground controls.

4 Close the valve on the LPG tank by turning it clockwise.

5 Allow the engine to run until it dies to bleed off any LPG pressure left in the system.

6 Slowly remove the LPG hose from the LPG filter.

⚠CAUTION Burn hazard. Beware of escaping LPG gas or liquid. Contact with LPG gas and/or liquid may cause severe burns. Loosen LPG connections very slowly to allow the LPG pressure to dissipate gradually. Do not allow the LPG gas and/or liquid squirt or spray.

7 Remove the LPG filter from the LPG tank.

8 Install the new LPG filter onto the tank and connect the LPG hose to the filter.

NOTICE Be sure the arrow on the filter, indicating flow direction, is pointing towards the engine.

LPG Filter	
Genie part number	65627

9 Open the valve on the LPG tank fully by turning it counterclockwise.

10 Start the engine from the ground controls and check for leaks.

NOTICE An LPG detector may be necessary to locate LPG leaks.

C-12
Replace the Distributor Cap and Rotor - GM Models

NOTICE GM engine specifications require that this procedure be performed every 800 hours.

Replacement of the distributor cap and rotor at the scheduled maintenance interval is essential to good engine performance and service life. A dirty or worn cap and rotor may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the cap and rotor be replaced more often.

NOTICE Perform this procedure with the engine off.

1 Open the engine side turntable cover.

2 Locate the distributor above the oil filter.

3 Tag and disconnect the coil and spark plug wires from the distributor cap.

4 Remove the distributor cap retaining fasteners. Remove the distributor cap.

5 Remove the rotor from the distributor.

6 Install the new rotor and distributor cap. Tighten the distributor cap retaining fasteners.

Distributor cap and rotor - Genie part numbers	
Distributor cap	65624
Rotor	65625

7 Install the coil and spark plug wires.

NOTICE Be sure that each spark plug wire is in the correct location on the distributor cap.attached to the correct spark plug.

Checklist D Procedures

REV B

D-1
Check the Boom Wear Pads

Maintaining the boom wear pads in good condition is essential to safe machine operation. Wear pads are placed on boom tube surfaces to provide a low friction, replaceable wear pad between moving parts. Improperly shimmed wear pads or continued use of extremely worn wear pads may result in component damage and unsafe operating conditions.

NOTICE If the wear pads are still within specification, refer to Repair Procedure 4-2, *How to Shim the Boom.*

1 Start the engine from the ground controls.

2 Raise the end of the boom to a comfortable working height (chest high), then extend the boom 1 foot / 30 cm.

3 Measure each wear pad. Replace the wear pad if it is less than specification. If the wear pad is still within specification, shim as necessary to obtain zero clearance and zero drag.

4 Extend and retract the boom through the entire range of motion to check for tight spots that may cause binding or scraping of the boom.

NOTICE Always maintain squareness between the outer and inner boom tubes.

Boom wear pad specifications

Upper and lower wear pads (minimum thickness)	7/16 inch 11 mm
Side wear pads (minimum thickness)	9/16 inch 14.3 mm

D-2
Check the Extendable Axle Wear Pads

Maintaining the axle wear pads in good condition is essential to safe machine operation. Wear pads are placed on axle tube surfaces to provice a low friction, replaceable wear pad between moving parts. Improperly shimmed wear pads or continued use of worn out wear pads may result in component damage and unsafe operating conditions.

NOTICE If the wear pads are not worn below specification but are still within specification, refer to Repair Procedure 16-1, *How to Shim an Extendable Axle.*

1 Start the engine from the platform controls and extend the axles.

2 Measure each wear pad. Replace the wear pad if it is less than specification. If the wear pad is not less than specification, shim as necessary to obtain zero clearance and zero drag.

3 Extend and retract the axles through the entire range of motion to check for tight spots that may cause binding or scraping of the axle tubes.

NOTICE Always maintain squareness between the outer and inner axle tubes.

Extendable axle wear pad specifications

Bottom and side wear pads (minimum thickness)	1/2 inch 12.7 mm

REV B CHECKLIST D PROCEDURES

D-3
Check the Free-wheel Configuration

Proper use of the free-wheel configuration is essential to safe machine operation. The free-wheel configuration is used primarily for towing. A machine configured to free-wheel without operator knowledge could result in death or serious injury and property damage.

⚠WARNING Collision hazard. Select a work site that is firm and level.

CAUTION Component damage hazard. If the machine must be towed, do not exceed 2 mph / 3.2 km/h.

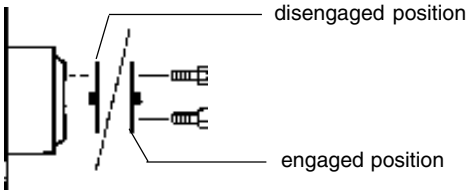
Non-steer wheels: All models

1 Chock the steer wheels to prevent the machine from rolling.

2 Center a lifting jack of ample capacity (20,000 lbs / 10,000 kg) under the drive chassis between the non-steer wheels.

3 Lift the wheels off the ground and then place blocks under the drive chassis for support.

4 Disengage the drive hubs by turning over the drive hub disconnect caps on each non-steer wheel hub.



5 Manually rotate each non-steer wheel.

⊙ Result: Each non-steer wheel should rotate with minimum effort.

6 Re-engage the drive hubs by turning over the hub disconnect caps. Rotate each wheel to check for engagement. Lift the machine and remove the blocks.

⚠WARNING Collision hazard. Failure to re-engage the drive hubs could result in death or serious injury and property damage.

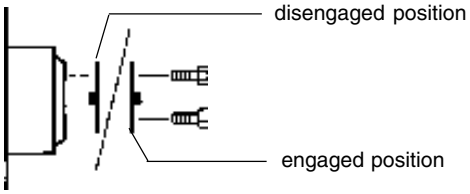
Steer wheels: 4WD models

7 Chock the non-steer wheels to prevent the machine from rolling.

8 Center a lifting jack of ample capacity (20,000 lbs / 10,000 kg) under the drive chassis between the steer wheels.

9 Lift the wheels off the ground and then place blocks under the drive chassis for support.

10 Disengage the drive hubs by turning over the drive hub disconnect caps on each steer wheel hub.



11 Manually rotate each steer wheel.

⊙ Result: Each steer wheel should rotate with minimum effort.

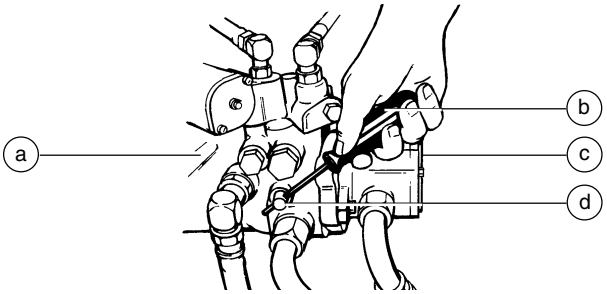
12 Re-engage the drive hubs by turning over the drive hub disconnect caps. Rotate each wheel to check for engagement. Lift the machine and remove the blocks.

⚠WARNING Collision hazard. Failure to re-engage the drive hubs could result in death or serious injury and property damage.

All models:

13 Turn the valve in a clockwise direction to be sure it is fully closed.

NOTICE The free-wheel valve is located on the drive pump, and should always remain closed.



a drive pump
b screwdriver
c lift pump
d free-wheel valve

D-4
Check the Turntable Rotation Bearing Bolts

Maintaining proper torque on the turntable bearing bolts is essential to safe machine operation. Improper bolt torque could result in an unsafe operating condition and component damage.

1 Start the engine from the platform controls and extend the axles.

2 Turn the key switch to ground controls.

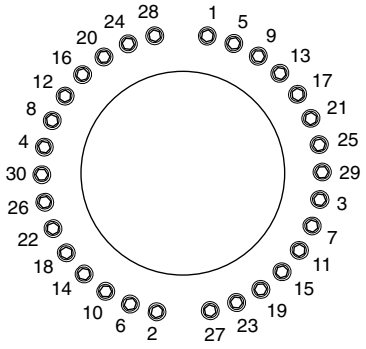
3 Raise the boom and place a safety chock on the lift cylinder rod. Carefully lower the boom onto the lift cylinder safety chock.

⚠WARNING Crushing hazard. Keep hands away from cylinder and all moving parts when lowering the boom.

NOTICE The lift cylinder safety chock is available through Genie Service Parts (part number 33484).

4 Remove the boom storage area cover retaining fasteners. Remove the cover.

5 Be sure that each turntable mounting bolt is torqued in sequence to 210 ft-lbs / 285 Nm.



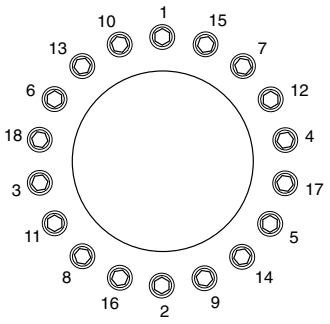
Bolt torque sequence

6 Install the boom storage area cover and tighten the retaining fasteners.

7 Raise the boom and remove the safety chock.

8 Lower the boom to the stowed position.

9 Check to ensure that each bearing mounting bolt under the drive chassis is torqued in sequence to 210 ft-lbs / 285 Nm.



Bolt torque sequence

D-5
Clean the Fuel Pump Strainer - Deutz Models

Cleaning the fuel pump strainer is essential for good engine performance and service life. A dirty or clogged strainer may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions or not operating the machine for extended periods of time may require that the strainer be cleaned more often.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Perform this procedure with the engine off.

NOTICE Immediately clean up any fuel that may have spilled during this procedure.

1 Open the engine side turntable cover and locate the fuel pump, located next to the engine oil level dipstick.

2 Tag, disconnect and plug the fuel supply hose from the fuel pump.

3 Remove the fuel pump cover retaining fastener. Remove the cover.

4 Gently clean the fuel strainer with clean diesel fuel or a mild solvent.

5 Install the fuel strainer and pump cover onto the fuel pump. Install and tighten the fuel pump cover retaining fastener.

6 Install the fuel supply hose to the fuel pump.

7 Start the engine from the ground controls and inspect the fuel pump and fuel supply hose for leaks.

⚠DANGER Explosion and fire hazard. If a fuel leak is discovered, keep any additional personnel from entering the area and do not operate the machine. Repair the leak immediately.

D-6
Replace the Fuel Filter - Deutz Models

Replacing the diesel fuel filter/water separator is essential to good engine performance and service life. A dirty or clogged filter/water separator may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the filter/water separator be replaced more often.

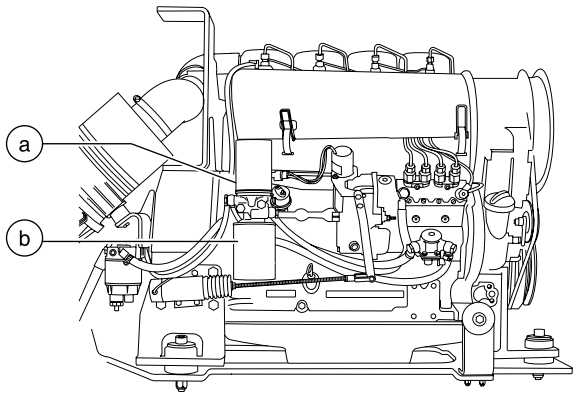
⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Replace the fuel filter/water separator in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Perform this procedure with the engine off.

1 Tag, disconnect and plug the fuel hose from the fuel tank at the inline fuel filter/water separator head.

2 Place a suitable container beneath the fuel filter.

3 Loosen the fuel filter with a filter wrench and drain the fuel into a suitable container. Remove the fuel filter from the engine when the fuel flow has slowed or stopped.



a fuel filter
b oil filter

4 Apply a thin layer of diesel fuel to the new fuel filter gasket.

Fuel filter	
Genie part number	75484

5 Install the new filter and tighten it securely by hand.

6 Clean up any diesel fuel that might have spilled during the procedure.

7 Use a permanent ink marker to write the date and number of hours from the hour meter on the filter.

8 Install the fuel tank hose onto the inline fuel filter /water separator head.

9 Bleed the fuel system. See C-3, *Replace the Fuel Filter/Water Separator Element - Diesel Models.*

D-7
Replace the Fuel Hoses - Deutz Models

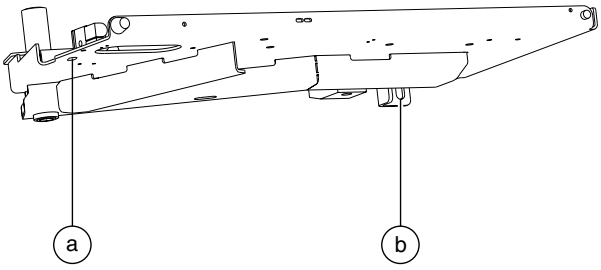
Maintaining the fuel hoses in good condition is essential to safe operation and good engine performance. Failure to detect a worn, cracked or leaking fuel hose may cause an unsafe operating condition.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Replace the fuel hoses in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

CAUTION Component damage hazard. Be sure the fuel hoses are routed the same way the original hoses were.

NOTICE Perform this procedure with the engine off and cooled.

1 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



a engine pivot plate anchor hole
b engine pivot plate retaining fastener

CHECKLIST D PROCEDURES REV B

2 Locate the engine pivot plate anchor hole on the turntable.

3 Install the bolt that was just removed through the engine pivot plate and into the anchor hole to secure the engine pivot plate from moving.

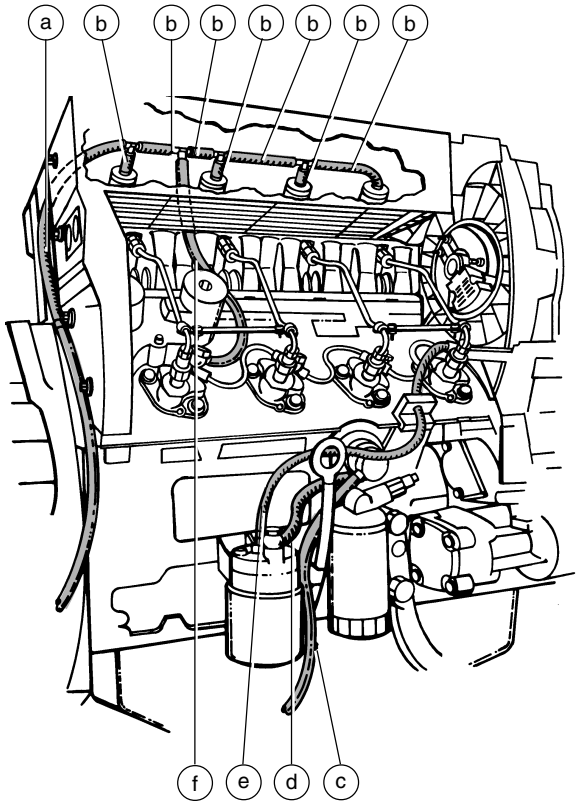
⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

4 At the fuel filter/water separator, disconnect the fuel hose to the fuel tank and drain the fuel tank into a suitable container. See capacity specifications.

Fuel tank capacity	33 gallons 124.9 liters

5 Remove and replace all of the fuel hoses and clamps according to the following illustration:

⚠DANGER Explosion and fire hazard. Fuel Injection systems operate at a very high pressure. Fuel may be expelled under pressure if the hoses are removed too quickly. Loosen the fuel lines very slowly to allow the fuel pressure to dissipate gradually. Wrap a cloth around fuel hoses to absorb leaking fuel before disconnecting them.



a hose from the injector to the fuel tank
b hoses connecting injectors
c hose from the fuel shutoff valve to the fuel pump
d hose from the fuel pump to the fuel filter
e hose from the fuel filter to the injection pump
f hose from the injection pump to the injectors

6 Remove the engine pivot plate retaining fastener from the engine pivot plate anchor hole.

7 Swing the engine pivot plate in towards the machine.

8 Install the bolt that was just removed into the original hole to secure the engine pivot plate.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

9 Bleed the fuel system. See C-3, *Replace the Fuel Filter/Water Separator Element - Diesel Models.*

D-8
Clean the Engine Breather Assembly - Perkins Models

NOTICE Information to perform this procedure is available in the *Perkins 704-30 User's Handbook* (Perkins part number TPD 1336 E).

Perkins 704-30 User's Handbook	
Genie part number	101840

D-9
Check the Engine Valve Clearances - Perkins Models

NOTICE Information to perform this procedure is available in the *Perkins 704-30 User's Handbook* (Perkins part number TPD 1336 E).

Perkins 704-30 User's Handbook	
Genie part number	101840

CHECKLIST D PROCEDURES REV B

D-10
Calibrate the Platform Overload System (if equipped)

NOTICE Genie specifications require that this procedure be performed every 1000 hours of operation or yearly.

Yearly calibration of the platform overload system is essential to safe machine operation. Continued use of an improperly calibrated platform overload system could result in the system failing to sense an overloaded platform. The stability of the machine is compromised and it could tip over.

NOTICE Perform this procedure with the machine on a firm, level surface.

1 Level the platform.

2 Determine the maximum platform capacity. Refer to the machine serial plate.

3 Using a suitable lifting device, place an appropriate test weight equal to that of the maximum platform capacity at the center of the platform floor.

Determine the limit switch trigger point:

4 Gently move the platform up and down by hand, so it bounces approximately 2.5 to 5 cm. Allow the platform to settle.

⊙ Result: **The overload indicator light and the alarm is on.** Slowly tighten the load spring adjustment nut by turning it clockwise just until the overload indicator light and alarm turns off.

NOTICE The platform will need to be moved up and down and allowed to settle in between adjustments.

NOTICE There may be an approximate 2 second delay before the overload indicator light turns on and the alarm sounds.

⊙ Result: **The overload indicator light and alarm is off.** Slowly loosen the load spring adjustment nut by turning it counterclockwise just until the overload indicator light and alarm turn on.

NOTICE There may be an approximate 2 second delay before the overload indicator light turns on and the alarm sounds.

NOTICE The platform will need to be moved up and down and allowed to settle in between adjustments.

Confirm the setting:

5 Turn the key switch to platform control. Start the engine from the platform controls.

6 Lift the test weight off the platform floor using a suitable lifting device.

7 Place the test weight back onto the center of the platform floor using a suitable lifting device.

⊙ Result: The alarm should be off. The platform overload indicator light should be off at both the ground and platform controls.

NOTICE There may be an approximate 2 second delay before the overload indicator light and alarm turn off.

8 Add an additional 10 lb / 4.5 kg test weight to the original test weight to overload the platform.

⊙ Result: The alarm should be sounding. The platform overload indicator light should be flashing at both the ground and platform controls.

NOTICE There may be an approximate 2 second delay before the overload indicator light turns on and the alarm sounds.

9 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should not operate.

10 Turn the key switch to ground control.

11 Test all machine functions from the ground controls.

⊙ Result: All ground control functions should not operate.

NOTICE If the platform overload system is not operating properly, repeat steps 1 through 4.

D-11
Replace the Drive Hub Oil

NOTICE Specifications require that this procedure be performed every 1500 hours or 12 months, whichever comes first.

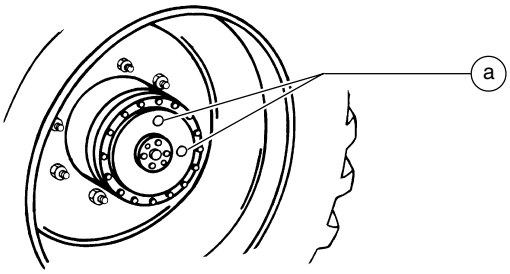
Replacing the drive hub oil is essential for good machine performance and service life. Failure to replace the drive hub oil at yearly intervals may cause the machine to perform poorly and continued use may cause component damage.

Drive Hubs:

1 Select the drive hub to be serviced. Drive the machine until one of the two plugs is at the lowest point.

2 Remove both plugs and drain the oil into a suitable container.

3 Drive the machine until one plug is at the top and the other is at 90 degrees.



a drive hub plugs

4 Fill the hub with oil from the top hole until the oil level is even with the bottom of the side hole. Install the plugs.

5 Repeat this procedure for each drive hub.

Drive hubs	
Capacity	61 fl oz 1.8 liters
Type:	SAE 90 multipurpose hypoid gear oil API service classification GL5

Turntable Rotate Drive Hub:

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Secure the turntable from rotating with the turntable rotation lock pin.

NOTICE The turntable rotation lock pin is located next to the boom rest pad.

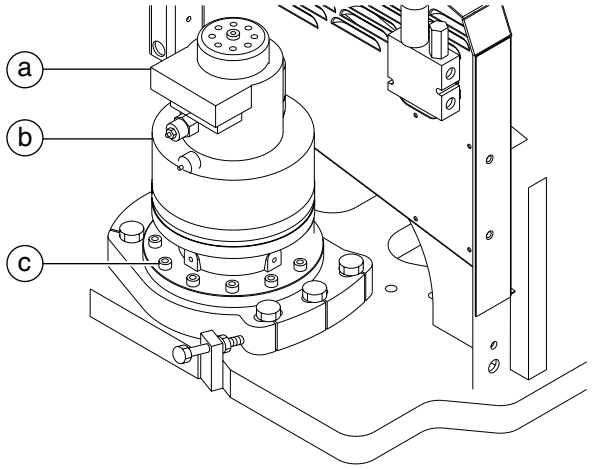
2 Tag, disconnect and plug the hydraulic hoses from the turntable rotate drive motor. Cap the fittings on the drive motor.

3 Attach a suitable lifting device to the lifting eyes located near the drive motor.

4 Remove the drive hub mounting bolts. Carefully remove the turntable rotate drive hub assembly from the machine.

⚠WARNING Crushing hazard. The turntable rotate drive hub assembly could become unbalanced and fall if not properly supported by the lifting device.

5 Remove the plug from the side of the drive hub. Drain the oil from the hub into a suitable container.



a motor
b drive hub
c drive hub mounting bolts

6 Install the drive hub assembly onto the machine. Torque the drive hub mounting bolts to 75 ft-lbs / 101.7 Nm.

7 Fill the drive hub with oil from the side hole until the oil level is even with the bottom of the hole. Apply pipe thread sealant to the plug. Install the plug.

8 Adjust turntable rotation gear backlash. Refer to Repair Procedure 11-1, *How to Adjust the Turntable Rotation Gear Backlash.*

Turntable rotate drive hub	
Oil capacity	32 fl oz 0.95 liters
Type:	SAE 90 multipurpose hypoid gear oil API service classification GL5

Checklist E Procedures

REV B

E-1
Test or Replace the Hydraulic Oil

Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil and suction strainers may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require oil changes to be performed more frequently.

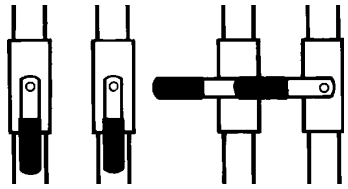
NOTICE Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test.**

NOTICE Perform this procedure with the boom in the stowed position.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the fuel tank. See repair procedure10-1, *How to Remove the Fuel Tank.*

2 Close the two hydraulic shutoff valves located at the hydraulic tank (if equipped).



open closed

CAUTION Component damage hazard. The engine must not be started with the hydraulic tank shutoff valves in the CLOSED position or component damage will occur. If the tank valves are closed, remove the key from the key switch and tag the machine to inform personnel of the condition.

3 Remove the drain plug from the hydraulic tank.

4 Completely drain the tank into a suitable container. See capacity specifications.

Hydraulic oil capacity	
Hydraulic tank capacity	45 gallons 170 liters
Hydraulic system capacity (including tank)	55 gallons 208 liters

5 Tag, disconnect and plug the two suction hoses that are attached to the hydraulic tank shutoff valves.

CHECKLIST E PROCEDURES REV B

6 Disconnect and plug the T-fitting located at the return filter with the 2 hoses connected to it. Cap the fitting on the return filter housing.

7 Disconnect and plug the supply hose for the auxiliary power unit. Cap the fitting on the hydraulic tank.

8 Remove the retaining fasteners from the hydraulic tank hold down straps. Remove the hold down straps from the hydraulic tank.

9 Support the hydraulic tank with 2 lifting straps. Place one lifting strap at each end of the tank and attach the lifting straps to an appropriate lifting device.

10 Remove the hydraulic tank from the machine.

⚠WARNING Crushing hazard. The hydraulic tank may become unbalanced and fall if it is not properly supported and secured to the lifting device.

11 Remove the suction strainers from the tank and clean them using a mild solvent.

12 Rinse out the inside of the tank using a mild solvent.

13 Install the suction strainers using pipe thread sealant on the threads.

14 Install the drain plug using pipe thread sealant on the threads.

15 Install the hydraulic tank onto the machine.

16 Install the two suction hoses and the supply hose for the auxiliary power unit.

17 Fill the tank with hydraulic oil until the level is within the top 2 inches / 5 cm of the sight gauge. Do not overfill.

18 Clean up any oil that may have spilled.

19 Open the hydraulic tank shutoff valves (if equipped).

CAUTION Component damage hazard. Be sure to open the two hydraulic tank shutoff valves and prime the pump after installing the hydraulic tank. Refer to Repair Procedure 8-2, *How to Prime the Pump*.

NOTICE Always use pipe thread sealant when installing the drain plug and strainers.

20 Operate all machine functions through a full cycle and check for leaks.

Hydraulic oil specifications

Before serial number 3349

Hydraulic oil type	Shell Donax TG (Dexron III)

After serial number 3348

Hydraulic oil type	Chevron Rykon MV equivalent
Approximate SAE grade	5W-20
Viscosity index rating	200

Chevron Rykon MV oil is fully compatible and mixable with Shell Donax TG (Dexron III) oils.
Genie specifications require hydraulic oils which are designed to give maximum protection to hydraulic systems, have the ability to perform over a wide temperature range, and have a minimum viscosity index rating of 150. They should provide excellent antiwear, oxidation, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.

Optional fluids

Biodegradable	Petro Canada Premium ECO 46 Statoil Hydra Way Bio Pa 32 BP Biohyd SE-S
Fire resistant	UCON Hydrolube HP-5046 Quintolubric 822
Mineral based	Shell Tellus T32 Shell Tellus T46 Chevron Aviation A

NOTICE Genie specifications require additional equipment and special installation instructions for the approved optional fluids. Consult the Genie Industries Service Department before use.

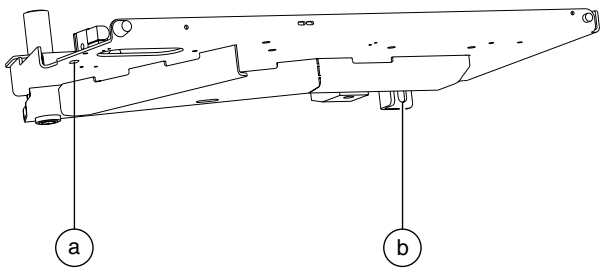
E-2
Change or Recondition the Engine Coolant, Liquid-cooled Models

Replacing or reconditioning the engine coolant is essential to good engine performance and service life. Old or dirty coolant may cause the engine to perform poorly and continued use may cause engine damage. Extremely dirty conditions may require coolant to be changed more frequently.

⚠CAUTION Bodily injury hazard. Beware of hot engine parts and coolant. Contact with hot engine parts and/or coolant may cause severe burns.

NOTICE Perform this procedure with the engine off and cooled.

1 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



a engine pivot plate anchor hole
b engine pivot plate retaining fastener

CHECKLIST E PROCEDURES REV B

2 Locate the engine pivot plate anchor hole on the turntable.

3 Install the bolt that was just removed through the engine pivot plate and into the anchor hole to secure the engine pivot plate from moving.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

4 Put on protective clothing and eye wear.

5 Disconnect the hose from the coolant recovery tank at the radiator and drain the coolant recovery tank into a suitable container.

6 Slowly remove the radiator cap from the radiator.

⚠CAUTION Bodily injury hazard. Allow any pressure to dissipate gradually before removing the radiator cap.

7 Open the drain valve on the radiator and allow all the coolant to drain into a suitable container.

Coolant capacity - Liquid cooled models

GM 3.0L	12 quarts 11.4 liters
Perkins 704-30	11.5 quarts 10.9 liters

8 After all the coolant has drained, close the drain valve. Connect the hose from the coolant recovery tank to the radiator.

9 Open the drain valve on the engine block and allow the coolant to drain into a suitable container. After the fluid has drained, close the drain valve.

10 Replace all coolant hoses and clamps.

11 Fill the radiator with the proper coolant mixture (coolant and water) for your climate until it is full. Install the radiator cap.

12 Fill the coolant recovery tank to the NORMAL range.

13 Clean up any coolant that may have spilled during this procedure.

14 Start the engine from the ground controls and let it run for 30 seconds. Turn the engine off and inspect for leaks.

15 Check the coolant level in the coolant recovery tank. Add coolant if needed.

16 Remove the engine pivot plate retaining fastener from the engine pivot plate anchor hole.

17 Swing the engine pivot plate in towards the machine.

18 Install the bolt that was just removed into the original hole to secure the engine pivot plate.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

19 Start the engine from the ground controls and let it run until it reaches normal operating temperature.

20 Turn the engine off. Allow the engine to cool.

21 Check the coolant level in the coolant recovery tank. Add coolant if needed.

E-3
Replace the Engine Air Breather - Perkins Models

NOTICE Information to perform this procedure is available in the *Perkins 704-30 User's Handbook* (Perkins part number TPD 1336 E).

Perkins 704-30 User's Handbook	
Genie part number	101840

E-4
Grease the Steer Axle Wheel Bearings, 2WD Models

Maintaining the steer axle wheel bearings is essential for safe machine operation and service life. Operating the machine with loose or worn wheel bearings may cause an unsafe operating condition and continued use may result in component damage. Extremely wet or dirty conditions or regular steam cleaning and pressure washing of the machine may require that this procedure be performed more often.

1 Loosen the wheel lug nuts. Do not remove them.

2 Block the non-steer wheels. Center a lifting jack under the steer axle.

3 Raise the machine approximately 6 inches / 15 cm. Place blocks under the drive chassis for support.

4 Remove the lug nuts. Remove the tire and wheel assembly.

5 Check for wheel bearing wear by attempting to move the wheel hub side to side, then up and down.

⊙ Result: There should be no side to side or up and down movement.

Skip to step 10 if there is no movement.

CHECKLIST E PROCEDURES REV B

6 Remove the dust cap from the hub and remove the cotter pin from the castle nut.

NOTICE Always replace the cotter pin with a new one when removing the castle nut or when checking the torque of the castle nut.

7 Tighten the castle nut to 35 ft-lbs / 47 Nm to seat the bearings.

8 Loosen the castle nut, then torque the castle nut to 8 ft-lbs / 11 Nm.

9 Check for wheel bearing wear by attempting to move the wheel hub side to side, then up and down.

⊙ Result: If there is side to side or up and down movement, proceed to step 10 to replace the wheel bearings with new ones.

NOTICE When replacing a wheel bearing, both the inner and outer bearings, including the pressed-in races, must be replaced.

⊙ Result: If there is no side to side or up and down movement, grease the wheel bearings.

10 Remove the castle nut.

NOTICE Always replace the cotter pin with a new one when removing the castle nut or when checking the torque of the castle nut.

11 Pull the hub off of the spindle. The washer and outer bearing should fall loose from the hub.

12 Place the hub on a flat surface and gently pry the bearing seal out of the hub. Remove the inner bearing.

13 Pack both bearings with clean, fresh grease.

14 Place the large inner bearing into the rear of the hub.

15 Install a new bearing grease seal into the hub by pressing it evenly into the hub until it is flush.

NOTICE Always replace the bearing grease seal when removing the hub.

16 Slide the hub onto the yoke spindle.

CAUTION Component damage hazard. Do not apply excessive force or damage to the lip of the seal may occur.

17 Place the outer bearing into the hub.

18 Install the washer and castle nut.

19 Torque the castle nut to 35 ft-lbs / 47 Nm to seat the bearings.

20 Loosen the castle nut, then torque the castle nut to 8 ft-lbs / 11 Nm.

21 Install a new cotter pin. Bend the cotter pin to lock it in place.

NOTICE Always replace the cotter pin with a new one when removing the castle nut or when checking the torque of the castle nut.

22 Install the dust cap.

23 Install the tire and wheel assembly. Torque the wheel lug nuts to 420 ft-lbs / 569.5 Nm.

24 Center a lifting jack under the steer axle.

25 Raise the machine approximately 6 inches / 15 cm. Remove the blocks from under the drive chassis.

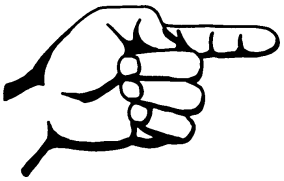
26 Lower the machine.

E-5
Check the Fuel Injectors - Perkins Models

NOTICE Engine specifications require that this procedure be performed every 3000 hours or 18 months, whichever comes first.

NOTICE Information to perform this procedure is available in the *Perkins 704-30 User's Handbook* (Perkins part number TPD 1336 E).

Perkins 704-30 User's Handbook
Genie part number 101840



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Repair Procedures

Observe and Obey:

- ☑ Repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.

Before Repairs Start:

- ☑ Read, understand and obey the safety rules and operating instructions in the *Genie S-80 and Genie S-85 Operator's Manual.*
- ☑ Be sure that all necessary tools and parts are available and ready for use.
- ☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
  - · Machine parked on a flat, level surface
  - · Boom in the stowed position
  - · Turntable rotated with the boom between the non-steering wheels
  - · Turntable secured with the turntable rotation lock pin
  - · Key switch in the off position with the key removed
  - · Wheels chocked

About This Section

Most of the procedures in this section should only be performed by a trained service professional in a suitably equipped workshop. Select the appropriate repair procedure after troubleshooting the problem.

Perform disassembly procedures to the point where repairs can be completed. Then to re-assemble, perform the disassembly steps in reverse order.

Symbols Legend

Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER Red—used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Orange—used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Yellow with safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION Yellow without safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE Green—used to indicate operation or maintenance information.

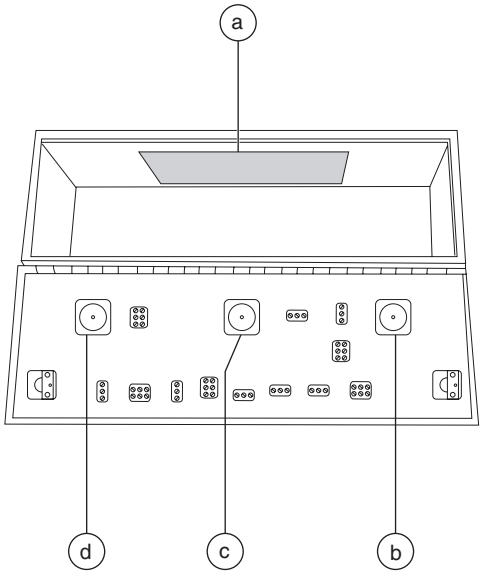
⊙ Indicates that a specific result is expected after performing a series of steps.

Platform Controls

REV B

The platform control box contains one printed circuit board. The ALC-500 circuit board inside the platform control box controls all proportional machine functions from the platform. The joystick controllers at the platform controls utilize Hall Effect technology and require no adjustment. The operating parameters of the joysticks are stored in memory at the ECM circuit board at the platform controls. If a joystick error occurs or if a joystick is replaced, it will need to be calibrated before that particular machine function will operate. See 1-2, *How to Calibrate a Joystick*.

Each joystick controller should operate smoothly and provide proportional speed control over its entire range of motion.



a ALC-500 circuit board
b drive/steer joystick controller
c boom extend/retract joystick controller
d boom up/down and turntable rotate left/right joystick controller

1-1 ALC-500 Circuit Board

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

NOTICE When the ALC-500 circuit board is replaced, the joystick controllers will need to be calibrated. See 1-2, *How to Calibrate a Joystick*.

How to Remove the ALC-500 Circuit Board

1 Push in the Emergency Stop button to the off position at both the ground and platform controls.

2 Remove the platform control box lid retaining fasteners. Open the control box lid.

3 Locate the ALC-500 circuit board mounted to the inside of the platform control box.

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

4 Attach a grounded wrist strap to the ground screw inside the platform control box.

CAUTION Component damage hazard. Electrostatic discharge (ESD) can damage printed circuit board components. Maintain firm contact with a metal part of the machine that is grounded at all times when handling printed circuit boards OR use a grounded wrist strap.

5 Carefully disconnect the wire connectors from the circuit board.

6 Remove the ALC-500 circuit board mounting fasteners.

7 Carefully remove the ALC-500 circuit board from the platform control box.

1-2 Joysticks

How to Calibrate a Joystick

The joysticks on this machine utilize digital Hall Effect technology for proportional control. If a joystick is disconnected or replaced, it must be calibrated before that particular machine function will operate.

NOTICE The joystick must be calibrated before the threshold, max-out or ramping can be set.

NOTICE Perform this procedure with the engine off.

1 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Turn the key switch to platform control. Do not start the engine.

3 Press down the foot switch and select a joystick to calibrate.

4 Move the joystick full stroke in either direction and hold for 5 seconds.

5 Return the joystick to the neutral position, pause for a moment, then move the joystick full stroke in the opposite direction. Hold for 5 seconds and return the joystick to the neutral position.

⊙ Result: The alarm should sound indicating successful joystick calibration.

6 Repeat this procedure for each joystick controlled machine function including the thumb rocker steer switch.

NOTICE No machine fuction should operate while performing the joystick calibration procedure.

How to Adjust the Joystick Max-out Setting

The max-out setting of a joystick controls the maximum speed of a joystick-controlled machine function. Whenever a hydraulic cylinder, drive motor or hydraulic pump is replaced, the max-out setting should be adjusted to maintain optimum performance. The max-out settings on the joystick can be changed to compensate for hydraulic pump wear to maintain peak performance from the machine.

NOTICE Perform this procedure with the boom in the stowed position.

1 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Turn the key switch to platform control. Do not start the engine.

3 Push in the platform controls red Emergency Stop button to the off position.

4 Do not press down the foot switch.

5 Move and hold the drive enable toggle switch in the right position and pull out the red Emergency Stop button to the on position.

6 When the alarm sounds, release the drive enable toggle switch.

7 Momentarily activate the drive enable toggle switch in the right direction 4 times.

⊙ Result: There should be a pause and the alarm should sound 4 times indicating that the machine is in max-out calibration mode.

8 Start the engine from the platform controls and press down the foot switch.

9 Start a timer and activate the machine function that needs to be adjusted. Record the time it takes for that function to complete a full cycle (ie; boom up).

10 Compare the machine function time with the table below and determine whether the function time needs to increase or decrease.

11 While the joystick is activated, adjust the max-out setting to achieve the proper function cycle time. Momentarily move the drive enable toggle switch in the right direction to increase the time or momentarily move the drive enable toggle switch in the left direction to decrease the time.

NOTICE Each time the drive enable toggle switch is momentarily moved, the time will change in 2% increments.

12 Repeat steps 9 through 11 for each joystick controlled machine function.

13 Return the joystick to the neutral position and wait for approximately 10 seconds.

⊙ Result: The alarm should sound indicating that the settings have been saved in memory.

NOTICE Do not operate any machine function during the 10 second waiting time.

Function speeds (factory settings)	
Boom up	89 to 93 seconds
Boom down	90 to 94 seconds
Boom extend	73 to 79 seconds
Boom retract	79 to 84 seconds
Turntable rotate, 360° boom fully stowed	80 to 84 seconds

How to Adjust the Joystick Ramp Rate Setting

The ramp rate setting of a joystick controls the time at which it takes for the joystick to reach maximum output, when moved out of the neutral position. The ramp rate settings of a joystick can be changed to compensate for hydraulic pump wear to maintain peak performance from the machine.

NOTICE Perform this procedure with the boom in the stowed position.

1 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Turn the key switch to platform control. Do not start the engine.

3 Push in the platform controls red Emergency Stop button to the off position.

4 Do not press down the foot switch.

5 Move and hold the drive enable toggle switch in the right position and pull out the red Emergency Stop button to the on position.

6 When the alarm sounds, release the drive enable toggle switch.

7 Momentarily activate the drive enable toggle switch in the right direction 6 times.

⊙ Result: There should be a pause and the alarm should sound 6 times indicating that the machine is in ramp rate calibration mode.

8 Start the engine from the platform controls and press down the foot switch.

9 Start a timer and simultaneously move the joystick in either direction full stroke. Note how long it takes the function to reach maximum speed. This is the ramp rate.

10 Compare the function ramp rate time with the table below and determine whether the ramp rate time needs to increase or decrease.

11 While the joystick is activated, set the ramp rate. Momentarily move the drive enable toggle switch in the right direction to increase the time or momentarily move the drive enable toggle switch in the left direction to decrease the time.

NOTICE Each time the drive enable toggle switch is momentarily moved, the time will change in 10% increments.

12 Repeat steps 9 through 11 for each joystick controlled machine function.

13 Return the joystick to the neutral position and wait for approximately 10 seconds.

⊙ Result: The alarm should sound indicating that the settings have been saved in memory.

NOTICE Do not operate any machine function during the 10 second waiting time.

Ramp rate (factory settings)	
Boom up/down and turntable rotate	
accelerate	3 seconds
decelerate	1 second
Boom extend/retract	
accelerate	4 seconds
decelerate	1 second
Drive	
accelerate	4 seconds
decelerate to neutral	0.5 second
decelerate, change of direction	0.75 second
decelerate, coasting	1 second
decelerate, braking	1 second
decelerate, shift from low to high speed	1 second
decelerate, shift from high to low speed	4 seconds

How to Adjust the Joystick Threshold Setting

The threshold setting of a joystick is the minimum output at which a function proportional valve can open and allow the function to operate.

NOTICE Perform this procedure with the boom in the stowed position.

1 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Turn the key switch to platform control. Do not start the engine.

3 Push in the platform controls red Emergency Stop button to the off position.

4 Do not press down the foot switch.

5 Move and hold the drive enable toggle switch in the right position and pull out the red Emergency Stop button to the on position.

6 When the alarm sounds, release the drive enable toggle switch.

7 Momentarily activate the drive enable toggle switch in the right direction 8 times.

⊙ Result: There should be a pause and the alarm should sound 8 times indicating that the machine is in threshold calibration mode.

8 Start the engine from the platform controls and press down the foot switch.

9 Select a boom function joystick to set the threshold.

10 Slowly move the joystick off center in either direction just until the function begins to move.

11 Slowly move the joystick back to the neutral position. Just before the function stops moving, move the drive enable toggle switch to either side to set the threshold.

⊙ Result: The alarm should sound indicating a successful calibration.

12 Repeat steps 9 through 11 for each boom joystick controlled machine function (boom up/down, boom extend/retract and turntable rotate).

13 Return the joystick to the neutral position and wait for approximately 10 seconds.

⊙ Result: The alarm should sound indicating that the settings have been saved in memory.

NOTICE Do not operate any machine function during the 10 second waiting time.

1-3
Foot Switch

How to Test the Foot Switch

NOTICE Perform this procedure with the key switch in the off position.

1 Remove the foot switch mounting fasteners.

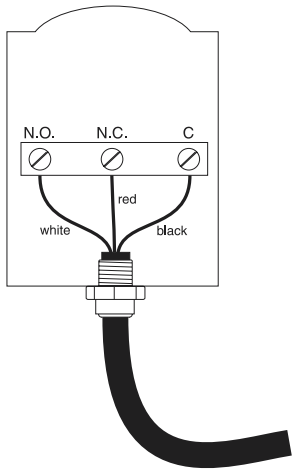
2 Remove the cover plate from the bottom of the foot switch to access the foot switch wire terminals.

3 Do not press down the foot switch. Connect the leads from an ohmmeter or continuity tester to each wire combination listed below and check for continuity.

Test	Desired result
red to black	continuity (zero Ω)
red to white	no continuity (infinite Ω)
black to white	no continuity (infinite Ω)

4 Press down the foot switch. Connect the leads from an ohmmeter or continuity tester to each wire combination listed below and check for continuity.

Test	Desired result
red to black	no continuity (infinite Ω)
red to white	no continuity (infinite Ω)
black to white	continuity (zero Ω)



1-4 Toggle Switches

Toggle switches used for single function switching are single pole double throw (SPDT) switches. Dual function switching requires a double pole double throw (DPDT) switch.

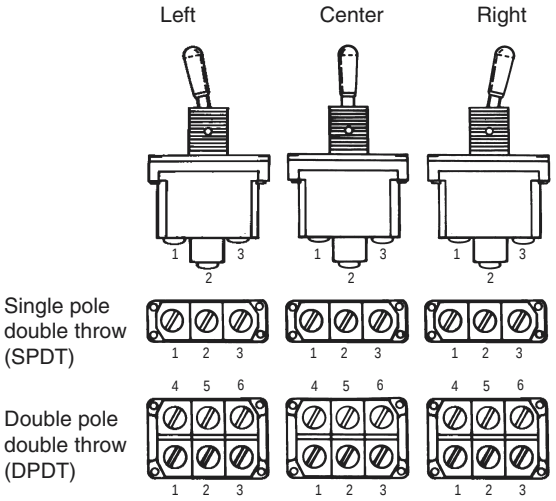
How to Test a Toggle Switch

NOTICE Continuity is the equivalent of 0 to 3 ohms. A simple continuity tester may not accurately test the switch.

This procedure covers fundamental switch testing and does not specifically apply to all varieties of toggle switches.

1 Turn the key switch to the off position. Tag and disconnect all wiring from the toggle switch to be tested.

2 Connect the leads of an ohmmeter to the switch terminals in the following combinations listed to check for continuity.



Test	Desired result
Left position	
terminal 1 to 2, 3, 4, 5 and 6	no continuity (infinite Ω)
terminal 2 to 3	continuity (zero Ω)
terminal 2 to 4, 5 and 6	no continuity (infinite Ω)
terminal 3 to 4, 5 and 6	no continuity (infinite Ω)
terminal 4 to 5 and 6	no continuity (infinite Ω)
terminal 5 to 6	continuity (zero Ω)
Center position	There are no terminal combinations that will produce continuity (infinite Ω)
Right position	
terminal 1 to 2	continuity (zero Ω)
terminal 1 to 3, 4, 5 and 6	no continuity (infinite Ω)
terminal 2 to 3, 4, 5 and 6	no continuity (infinite Ω)
terminal 3 to 4, 5 and 6	no continuity (infinite Ω)
terminal 4 to 5	continuity (zero Ω)
terminal 4 to 6	no continuity (infinite Ω)
terminal 5 to 6	no continuity (infinite Ω)

Platform Components

REV A

2-1 Platform

How to Remove the Platform

1 Remove the cable clamp from the top of the platform mounting weldment.

2 Remove the mounting fasteners from the power to platform outlet box bracket. Lay the outlet box and bracket assembly off to the side.

3 Remove the foot switch mounting fasteners.

4 Remove the cover plate from the bottom of the foot switch to access the foot switch wire terminals.

5 Tag and disconnect the foot switch wiring from the foot switch. Remove the cable from the back of the platform.

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

6 Remove the platform control box mounting fasteners. Lower the control box and set it aside.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

NOTICE If your machine is equipped with an airline to platform option, the airline must be disconnected from the platform before removal.

7 Support and secure the platform to an appropriate lifting device.

8 Remove the platform mounting fasteners and remove the platform from the machine.

⚠WARNING Crushing hazard. The platform could become unstable and fall when it is removed from the machine if not properly supported.

2-2
Platform Leveling Slave Cylinder

The slave cylinder and the rotator pivot are the two primary supports for the platform. The slave cylinder keeps the platform level through the entire range of boom motion. It operates in a closed-circuit hydraulic loop with the master cylinder. The slave cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Slave Cylinder

NOTICE Before cylinder removal is considered to correct a malfunction, bleed the slave cylinder to be sure there is no air in the closed loop hydraulic circuit.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Extend the boom until the slave cylinder barrel-end pivot pin is accessible.

2 Raise the boom approximately 3 feet / 1 m and place a structure capable of supporting it under the platform.

3 Lower the boom until the platform is resting on the structure just enough to support the platform.

NOTICE Do not rest the entire weight of the boom on the structure.

4 Tag, disconnect and plug the hydraulic hoses from the slave cylinder at the union located near the end of the boom tubes and connect them together using a connector. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

5 Remove the pin retaining fastener from the slave cylinder rod-end pivot pin. Do not remove the pin.

6 Remove the external retaining ring from the barrel-end pivot pin.

7 Use a soft metal drift to drive the rod-end pivot pin out.

8 Use a soft metal drift and drive the barrel-end pin out.

9 Carefully pull the cylinder out of the boom.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

How to Bleed the Slave Cylinder

NOTICE Do not start the engine. Use auxiliary power for all machine functions in this procedure.

1 Raise the boom to a horizontal position.

2 Move the platform level toggle switch up and down through two complete platform leveling cycles to remove any air that might be in the system.

2-3 Platform Rotator

The platform rotator is a hydraulically activated helical gear assembly used to rotate the platform 160 degrees.

How to Remove the Platform Rotator

CAUTION Component damage hazard. Mark the platform mounting weldment and the rotator flange before removing the platform mounting weldment. The platform mounting weldment must be replaced in the exact same position on the rotator flange as it was before removal. If a new rotator is installed or the rotator is disassembled, proper alignment can be achieved by rotating the rotator all the way to the left and then installing the platform mounting weldment all the way in the left position.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the platform. See 2-1, *How to Remove the Platform*.

2 Tag, disconnect and plug the hydraulic hoses from the platform rotator manifold. Cap the fittings on the rotator.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

3 **S-85:** Support the jib boom leveling arms and the platform mounting weldment with an appropriate lifting device. Do not apply any lifting pressure.

4 Remove the mounting bolts from the platform mounting weldment. Remove the center bolt and slide the platform mounting weldment off of the platform rotator.

⚠WARNING Crushing hazard. The platform mounting weldment could become unbalanced and fall if not properly supported when removed from the machine.

5 Support the platform rotator with an appropriate lifting device. Do not apply any lifting pressure.

S-80:

6 Support the rod end of the platform leveling slave cylinder. Protect the cylinder rod from damage.

7 Remove the pivot pin retaining fasteners from both the slave cylinder rod-end pivot pin and the rotator pivot pin.

8 Use a soft metal drift to remove both pivot pins. Remove the platform rotator from the machine.

⚠CAUTION Crushing hazard. The platform rotator may become unbalanced and fall if not properly supported.

S-85:

6 Remove the pin retaining fasteners from the jib boom and jib boom leveling arms to platform rotator pivot pins. Do not remove the pins.

7 Support the jib boom leveling arms.

8 Use a soft metal drift to drive both pins out, then remove the platform rotator from the machine.

⚠CAUTION Bodily injury hazard. The jib boom leveling arms may fall if not properly supported.

9 Lower the jib boom leveling arms.

⚠CAUTION Crushing hazard. The platform rotator may become unbalanced and fall if not properly supported.

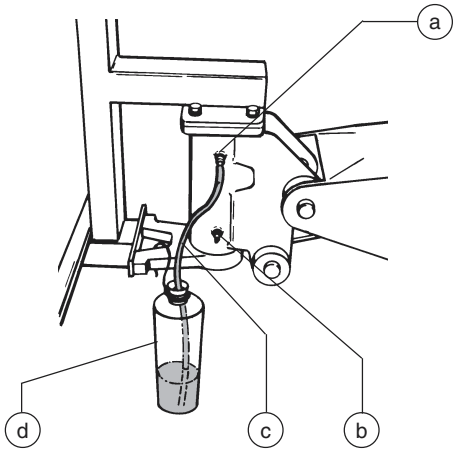
NOTICE When installing the platform rotator fasteners, torque the fasteners to specifications.

Torque specifications	
1-8 center bolt (grade 2)	200 ft-lbs 271 Nm
1-8 center bolt (grade 8)	480 ft-lbs 651 Nm
3/8 -16 bolts	47 ft-lbs 63.7 Nm

How to Bleed the Platform Rotator

NOTICE Do not start the engine. Use auxiliary power for all machine functions in this procedure.

1 Connect a clear hose to the top bleed valve. Place the other end of the hose in a container to collect any drainage. Secure the container to the boom.



a top bleed valve
b bottom bleed valve
c clear hose
d container

2 Move the platform rotate toggle switch to the left and then to the right through two platform rotation cycles, continue holding the switch to the right until the platform is fully rotated to the right.

3 Open the top bleed valve, but do not remove it.

4 Move the platform rotate toggle switch to the left until the platform is fully rotated to the left. Continue holding the switch until air stops coming out of the bleed valve. Close the bleed valve.

⚠WARNING Crushing hazard. Keep clear of the platform during rotation.

5 Connect the clear hose to the bottom bleed valve. Open the bottom bleed valve, but do not remove it.

6 Hold the platform rotate toggle switch to the right until the platform is fully rotated to the right. Continue holding the switch until air stops coming out of the bleed valve. Close the bleed valve.

⚠WARNING Crushing hazard. Keep clear of the platform during rotation.

7 Remove the hose from the bleed valve and clean up any hydraulic oil that may have spilled.

8 Rotate the platform full right, then full left and inspect the bleed valves for leaks.

Jib Boom Components, S-85

REV A

3-1
Jib Boom

How to Remove the Jib Boom

NOTICE Perform this procedure with the boom in the stowed position.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the platform. See 2-1, *How to Remove the Platform*.

2 Remove the platform mounting weldment and the platform rotator. See 2-3, *How to Remove the Platform Rotator*.

3 Remove the cable cover from the side of the jib boom.

4 Support the jib boom with a lifting device.

5 Tag, disconnect and plug the jib boom lift cylinder hydraulic hoses. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

6 Support the barrel end of the cylinder with a lifting device.

7 Remove the pin retaining fastener from the jib boom lift cylinder barrel-end pivot pin.

8 Use a soft metal drift to remove the pin and lay the cylinder onto the ground.

9 Attach a lifting strap from an overhead crane to the jib boom.

10 Remove the pin retaining fastener from the jib boom pivot pin.

11 Use a soft metal drift to remove the pin. Remove the jib boom from the jib boom bell crank.

⚠WARNING Crushing hazard. The jib boom could become unbalanced and fall if not properly supported by the overhead crane when removed from the machine.

12 Remove the pin retaining fastener from the jib boom lift cylinder rod-end pivot pin. Do not remove the pin.

13 Slide both of the jib boom leveling arms off of the jib boom pivot pin.

14 Attach a lifting strap from an overhead crane to the lug at the rod end of the jib boom lift cylinder.

15 Use a soft metal drift to remove the jib boom lift cylinder rod-end pivot pin. Remove the jib boom lift cylinder from the jib boom bell crank.

⚠WARNING Crushing hazard. The jib boom lift cylinder could become unbalanced and fall if not properly supported by the overhead crane when removed from the machine.

3-2
Jib Boom Bell Crank

How to Remove the Jib Boom Bell Crank

NOTICE Perform this procedure with the boom in the stowed position.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

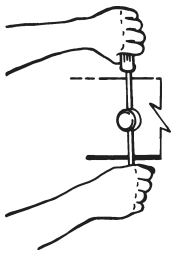
1 Remove the jib boom. See 3-1, *How to Remove the Jib Boom.*

2 Support the rod end of the platform leveling slave cylinder. Protect the cylinder rod from damage.

3 Attach a strap from an overhead crane to the bell crank for support.

4 Remove the pin retaining fasteners from the slave cylinder rod-end pivot pin.

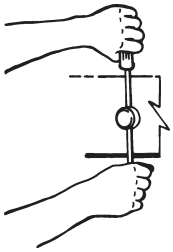
5 Place a rod through the pin and twist to remove the pin. Lower the rod end of the platform leveling slave cylinder.



6 Remove the pin retaining fasteners from the bell crank pivot pin.

7 Place a rod through the pin and twist to remove the pin. Remove the bell crank from the boom.

⚠WARNING Crushing hazard. The jib boom bell crank could become unbalanced and fall if not properly supported when removed from the machine.



3-3
Jib Boom Lift Cylinder

How to Remove the Jib Boom Lift Cylinder

NOTICE Perform this procedure with the boom in the stowed position.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the jib boom slightly and place blocks under the platform mounting weldment. Then lower the jib boom until the platform is resting on the blocks just enough to support the platform.

NOTICE Do not rest the entire weight of the boom on the blocks.

2 Tag, disconnect and plug the jib boom lift cylinder hydraulic hoses. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

3 Remove the pin retaining fasteners from the jib boom lift cylinder rod-end pivot pin. Do not remove the pin.

4 Use a soft metal drift to tap the jib boom lift cylinder rod-end pivot pin half way out. Then lower one of the leveling arms to the ground. Tap the pin the other direction and lower the opposite leveling arm. Do not remove the pin.

5 Attach a lifting strap from an overhead crane to the lug at the rod end of the jib boom lift cylinder.

6 Remove the pin retaining fastener from the jib boom lift cylinder barrel-end pivot pin. Use a soft metal drift to remove the pin.

7 Use a soft metal drift to remove the jib boom lift cylinder rod-end pin. Remove the cylinder from the machine.

⚠WARNING Crushing hazard. The jib boom lift cylinder could become unbalanced and fall if not properly supported when removed from the machine.

Boom Components

REV A

4-1 Cable Track

The boom cable track guides cables and hoses running up the boom. It can be repaired link by link without removing the cables and hoses that run through it. Removing the entire boom cable track is necessary when performing major repairs that involve removing the boom.

How to Remove the Cable Track

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Open the platform control box.

2 Tag and disconnect the foot switch wiring from the terminal strip inside the platform control box.

3 Loosen the squeeze connector and remove the foot switch cable from the control box.

4 Disconnect the wire connectors from the bottom of the platform control box.

NOTICE When installing the wire connectors to the bottom of the platform control box, match the color of the connectors to those on the control box to be sure they are installed in the correct location.

5 Remove the mounting fasteners from the power to platform outlet box bracket. Lay the outlet box and bracket assembly off to the side.

6 **S-80:** Tag, disconnect and plug the hydraulic hoses from the counterbalance valve manifold located on the platform rotator. Cap the fittings on the manifold.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

7 Tag, disconnect and plug the hydraulic hoses from the platform leveling slave cylinder at the union and connect the hoses from the cylinder together using a connector.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

S-85:

8 Remove the hose and cable cover from the side of the jib boom.

9 Tag, disconnect and plug the hydraulic hoses from the jib boom/platform rotate select manifold. Cap the fittings on the manifold.

10 Tag, disconnect and plug the wiring from the jib boom/platform rotate select manifold.

11 Tag, disconnect and plug the hydraulic hoses from the jib boom lift cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

All models:

12 From the ground controls, raise the boom to a horizontal position.

13 Remove the fasteners from the drive speed limit switch bracket (LS1RS) mounted on the side of the boom at the platform end of the boom. Do not remove the limit switch from the bracket.

14 Remove the cotter pin from the upper cable track at the platform end of the boom.

NOTICE Always replace the cotter pin with a new one.

15 Remove the cable track guide fasteners from the cable track guides at the platform end of the boom. Remove the cable track guides from the boom.

16 Remove the cable clamp from the pivot end of the boom.

17 Place blocks between the upper and lower cable tracks and secure the upper and lower tracks together.

⚠WARNING Crushing hazard. If the upper and lower cable tracks are not properly secured together, the cable track could become unbalanced and fall when removed from the machine.

18 Attach a lifting strap from an overhead crane to the cable track.

19 Remove the mounting fasteners that attach the lower cable track to the boom.

20 Remove the cable track from the machine and place it on a structure capable of supporting it.

⚠WARNING Crushing hazard. The cable track could become unbalanced and fall if not properly attached to the overhead crane.

CAUTION Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

How to Repair the Cable Track

CAUTION Component damage hazard. The boom cable track can be damaged if it is twisted.

NOTICE A cable track repair kit is available through the Genie Industries Service Parts Department, part no. 77896. The kit includes a 4 link section of cable track.

1 Visually inspect the cable track and determine which 4 link section needs to be replaced.

2 Carefully remove the snap rings from each end of the damaged section of cable track.

3 Remove the retaining fasteners from the upper black rollers from the 4 link section of cable track to be replaced. Remove the rollers.

4 Lift up the hoses and cables and carefully remove the damaged 4 link section of cable track.

CAUTION Component damage hazard. Hoses and cables can be damaged if they are kinked or pinched.

5 Remove the upper rollers from the replacement section of cable track.

6 Lift up the hoses and cables and carefully insert the new 4 link section of cable track.

CAUTION Component damage hazard. Hoses and cables can be damaged if they are kinked or pinched.

7 Connect the ends of the replacement cable track section to the existing cable track using the snap rings.

8 Install the rollers onto the new section of cable track.

9 Operate the boom extend/retract function through a full cycle to ensure smooth operation of the new section of cable track.

4-2 Boom

How to Shim the Boom

1 Measure each side wear pad.

NOTICE Replace the pad if it is less than 9/16 inch / 14.3 mm thick. If the pad is more than 9/16 inch / 14.3 mm thick, perform the following procedure.

2 Measure each bottom and top wear pad.

NOTICE Replace the pad if it is less than 7/16 inch / 11 mm thick. If the pad is more than 7/16 inch / 11 mm thick, perform the following procedure.

3 Extend the boom until the wear pads are accessible.

4 Loosen the wear pad mounting fasteners.

5 Install the new shims under the wear pad to obtain zero clearance and zero drag.

6 Tighten the mounting fasteners.

7 Extend and retract the boom through an entire cycle. Check for tight spots that could cause binding or scraping.

NOTICE Always maintain squareness between the outer and inner boom tubes.

How to Remove the Boom

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

NOTICE Perform this procedure with the boom in the stowed position.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the platform. See 2-1, *How to Remove the Platform*.

2 Remove the platform rotator and leveling slave cylinder. See 2-3, *How to Remove the Platform Rotator*.

3 Remove the cable track. See 4-1, *How to Remove the Cable Track.*

4 **S-85:** Remove the jib boom. See 3-1, *How to Remove the Jib Boom*.

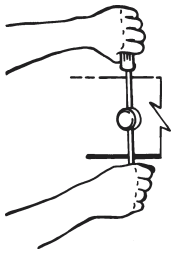
5 **S-85:** Remove the jib boom bell crank. See 3-2, *How to Remove the Jib Boom Bell Crank*.

6 Raise the boom to a horizontal position high enough that the boom lift cylinder rod end can clear the boom lift cylinder mounting boss.

7 Remove the turntable end cover.

8 Remove the pin retaining fasteners from the master cylinder rod-end pivot pin.

9 Place a rod through the pin and twist to remove the pin. Lower the rod end of the master cylinder.



10 Remove the fasteners from the boom angle limit switches (LS2RO and LS2RS) mounted to the inside of both turntable riser side plates at the pivot end of the boom. Do not disconnect the wiring.

11 Remove the fasteners from the boom extend limit switch (LS1RO) mounted next to the boom extension cylinder at the pivot end of the boom. Do not disconnect the wiring.

12 Tag, disconnect and plug the extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

13 Attach an overhead 5 ton / 5000 kg crane to the center point of the boom.

14 Attach a similar lifting device to the boom lift cylinder for support.

15 Place support blocks under the boom lift cylinder, across the turntable.

16 Remove the pin retaining fastener from the boom lift cylinder rod-end pin. Use a soft metal drift to remove the pin.

⚠WARNING Crushing hazard. The boom lift cylinder could fall if not properly supported.

17 Lower the rod end of the lift cylinder onto support blocks. Protect the cylinder rod from damage.

18 Remove the pin retaining fastener from the boom pivot pin.

19 Use a soft metal drift to remove the boom pivot pin. Carefully remove the boom from the machine.

⚠WARNING Crushing hazard. The boom could become unbalanced and fall if not properly supported by the overhead crane.

How to Disassemble the Boom

NOTICE Complete disassembly of the boom is only necessary if the outer or inner boom tubes must be replaced. The extension cylinder can be removed without completely disassembling the boom. See 4-4, *How to Remove the Extension Cylinders*.

1 Remove the boom. See 4-2, *How to Remove the Boom*.

2 Remove the external snap rings from the extension cylinder pivot pin at the pivot end of the number 1 boom tube. Use a soft metal drift to remove the pin.

3 Remove and label the wear pads from the top, side, and bottom of the 1 boom tube at the platform end of the boom.

NOTICE Pay careful attention to the location and quantity of shims used with each wear pad.

4 Remove the two wear pad stop bolts from each side of the number 1 boom tube (located on the outside).

5 Attach a lifting strap from an overhead crane to the number 2 and number 3 boom tubes at the platform end of the boom for support.

6 Support and slide the number 2 and 3 boom tubes out of the number 1 boom tube. Place the number 2 and 3 boom tubes on blocks for support.

⚠WARNING Crushing hazard. The number 2 and 3 boom tubes could become unbalanced and fall when they are removed from the number 1 boom tube if they are not properly supported.

NOTICE During removal, the overhead crane strap will need to be carefully adjusted for proper balancing.

7 Tag and remove the wear pads from the top, side, and bottom of the number 2 boom tube at the platform end of the boom.

8 Remove the trunnion pin retaining fasteners at the base end of the number 2 boom tube. Use a slide hammer to remove the trunnion pins.

9 Attach a lifting strap from an overhead crane to the number 3 boom tube at the platform end of the boom for support.

10 Support and slide the number 3 boom tube out of the number 2 boom tube. Place the number 3 boom tube on blocks for support.

⚠WARNING Crushing hazard. The number 3 boom tube could become unbalanced and fall when removed from the number 2 boom tube if not properly supported.

NOTICE During removal, the overhead crane strap will need to be carefully adjusted for proper balancing.

11 Remove the external snap rings from the extension cylinder pivot pin at the platform end of the number 3 boom tube. Use a soft metal drift to remove the pin.

12 Support and slide the extension cylinder out of the pivot end of the number 3 boom tube. Place the extension cylinder on blocks for support.

⚠WARNING Crushing hazard. The extension cylinder could become unbalanced and fall when it is removed from the number 3 boom tube if not properly supported.

NOTICE During removal, the overhead crane strap will need to be carefully adjusted for proper balancing.

4-3 Boom Lift Cylinder

How to Remove the Boom Lift Cylinder

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the boom to a horizontal position high enough that the boom lift cylinder rod end can clear the boom lift cylinder mounting boss.

2 Remove the center turntable cover fasteners. Remove the cover.

3 Place support blocks under the boom lift cylinder across the turntable side plates.

4 Attach an overhead 5 ton / 5000 kg crane to the boom for support. Do not lift the boom.

5 Support the rod end of the boom lift cylinder with an overhead crane or similar lifting device.

⚠WARNING Crushing hazard. The boom lift cylinder could become unbalanced and fall when it is disconnected from the machine if not properly supported.

6 Tag, disconnect and plug the boom lift cylinder hydraulic hoses. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

7 Remove the pin retaining fastener from the boom lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin, and lower the lift cylinder onto the blocks. Protect the cylinder rod from damage.

⚠WARNING Crushing hazard. The boom lift cylinder could become unbalanced and fall when it is disconnected from the machine if not properly supported.

8 Remove the mounting fasteners from the barrel-end cylinder pin retaining plates.

9 With the lift cylinder being supported by the overhead crane, pull the cylinder toward the platform and remove it from the machine.

⚠WARNING Crushing hazard. The lift cylinder could become unbalanced and fall if not properly supported.

CAUTION Component damage hazard. The cables and hydraulic hoses can be damaged if the lift cylinder is pulled across them.

4-4 Extension Cylinders

The extension cylinder consists of two cylinders that are fastened together. The first cylinder extends and retracts the number 2 boom tube. The second cylinder extends and retracts the number 3 boom tube. The extension cylinders are equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Extension Cylinders

⚠WARNING This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the boom to a horizontal position, fully extend the boom and fully lower the platform.

2 Remove the 2 bolts that are located on each side of the number 3 boom tube near the platform end of the number 2 boom tube.

3 Place a 4 in x 4 in x 6 ft / 10 cm x 10 cm x 1.83 m block on top of the number 3 boom tube and place one end of the block against the weldment at the platform end of the boom.

4 Retract the boom until the number 2 boom tube is fully retracted into the number 1 boom tube.

NOTICE The number 3 boom tube will remain extended 6 feet / 1.83 m.

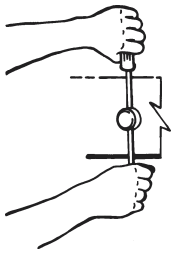
5 Remove the external snap rings from the extension cylinder pivot pin at the platform end. Use a soft metal drift to remove the pin.

6 Remove the turntable end cover.

7 Support the rod end of the master cylinder with a lifting device.

8 Remove the pin retaining fastener from the master cylinder rod-end pivot pin. Place a rod through the pin and twist to remove the pin.

NOTICE Use the platform level toggle switch with auxiliary power to relieve pressure on the master cylinder barrel-end pivot pin.



9 Lay the master cylinder down. Protect the cylinder rod from damage.

10 Remove the external snap rings from the extension cylinder pivot pin at the pivot end of the boom. Use a soft metal drift to remove the pin through the access holes in the turntable riser.

11 Using auxiliary power, move the boom extend/retract toggle switch in the extend direction and extend the extension cylinder out the pivot end of the boom approximately 1 foot / 30 cm.

12 Tag, disconnect and plug the extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

13 Attach a lifting strap from an overhead crane to the end of the extension cylinder and lift slightly to relieve the pressure on the trunnion pins.

14 Remove the trunnion pin access covers from both sides of the number 1 boom tube at the pivot end of the boom.

15 Remove the trunnion pin retaining fastener and use a slide hammer to remove the pins.

16 Support and slide the extension cylinder out of the pivot end of the boom.

⚠WARNING Crushing hazard. The extension cylinder could become unbalanced and fall when it is removed from the machine if not properly supported.

NOTICE Note the length of the cylinder after removal. The cylinder must be at the same length for installation.

4-5 Platform Leveling Master Cylinder

The master cylinder acts as a pump for the slave cylinder. It is part of the closed loop hydraulic circuit that keeps the platform level through the entire range of boom motion. The master cylinder is located inside the pivot end of the boom.

How to Remove the Platform Leveling Master Cylinder

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the boom until the master cylinder rod-end pivot pin is accessible.

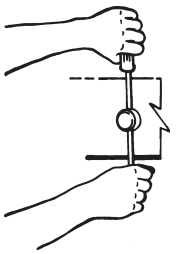
2 Remove the turntable end cover to access the master cylinder.

3 Tag, disconnect and plug the master cylinder hydraulic hoses. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

4 Remove the pin retaining fastener from the master cylinder barrel-end pivot pin.

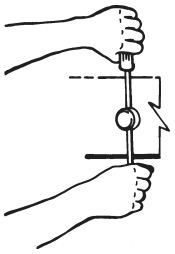
5 Place a rod through the barel-end pivot pin and twist to remove the pin.



6 Attach a lifting strap from an overhead crane to the lug on the rod end of the master cylinder.

7 Remove the pin retaining fastener from the rod-end pivot pin.

8 Place a rod through the rod-end pivot pin and twist to remove the pin.



9 Remove the master cylinder from the machine.

⚠WARNING Crushing hazard. The master cylinder could become unbalanced and fall if it is not properly supported by the lifting device when removed from the machine.

Turntable Covers

REV A

5-1 Turntable Covers

How to Remove a Turntable Cover

1 Raise the turntable cover. Support and secure the open cover with an overhead crane or forklift. Do not lift the cover.

⚠WARNING Crushing hazard. Due to its heavy weight, do not attempt to support the cover by hand.

CAUTION Component damage hazard. Protect the cover from damage by using carpet or padding on the crane or forkliftforks.

2 Remove the upper retaining clip from the gas strut.

3 Gently pry the strut pivot socket off of the ball stud and lower the strut. Protect the strut cylinder rod from damage.

⚠WARNING Crushing hazard. The cover could fall if not properly supported when the strut is removed.

NOTICE Mark the location of the hinge support bracket on the bulkhead to ensure proper cover alignment during installation.

4 Remove the cover hinge bolts that fasten the hinge support bracket to the bulkhead.

5 Carefully lift and remove the cover from the machine.

⚠WARNING Bodily injury hazard. Safety decals are essential to safe machine operation. Failure to replace all safety and instructional decals could create a situation resulting in death or serious injury. If a turntable cover must be replaced, be sure that all appropriate safety and instructional decals are applied to the new cover.

⚠WARNING Crushing hazard. The turntable cover could become unbalanced and fall if not properly supported and secured to an appropriate lifting device.

NOTICE Alignment adjustments may be necessary when a new cover is installed.

Engines

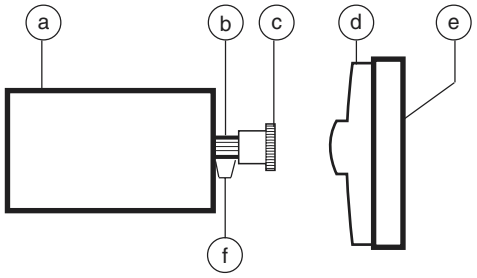
REV A

6-1 RPM Adjustment

Refer to Maintenance Procedure B-9, *Check and Adjust the Engine RPM.*

6-2 Flex Plate

The flex plate couples the engine to the pump. The flex plate is bolted to the engine flywheel and has a cut-out in the center for the pump coupler.



a pump
b pump shaft
c coupler
d flex plate
e flywheel
f 0.185 inch gap - Deutz Models
0.15 inch gap - GM Models
0.3 inch gap - Perkins Models

How to Remove the Flex Plate

1 Disconnect the wiring plug at the electronic proportional controller located on the drive pump.

2 **Diesel models:** Remove the fuel filter/water separator retaining fasteners from the pump mounting plate. Do not disconnect the fuel hoses.

3 **Diesel models:** Remove the fuel filter/water separator and lay it to the side.

4 Remove the medium and high pressure filters from the filter mounting bracket. Do not disconnect the hydraulic hoses.

5 Remove the medium and high pressure filter bracket mounting fasteners. Remove the bracket from the engine tray.

6 Support the drive pump assembly with an appropriate lifting device.

7 Remove all of the pump mounting plate to engine bell housing bolts.

8 Carefully pull the pump away from the engine and secure it from moving.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

9 Remove the flex plate mounting fasteners. Remove the flex plate from the flywheel.

How to Install the Flex Plate

1 Install the flex plate onto the flywheel with the raised spline towards the pump.

2 Apply Loctite® removable thread sealant to the flex plate mounting fasteners. Torque the flex plate mounting fasteners to 30 ft-lbs / 41 Nm.

3 Install the coupler onto the pump shaft with the set screw toward the pump. Leave the appropriate gap between the coupler and pump end plate for your engine.

Pump coupler gap specification	
Deutz models	0.185 inch 4.7 mm
GM models	0.15 inch 3.8 mm
Perkins models	0.3 inch 7.6 mm

4 Apply Loctite® removable thread sealant to the coupler set screw. Torque the set screw to 20 ft-lbs / 27 Nm.

CAUTION Component damage hazard. Do not force the drive pump during installation or the flex plate may become damaged.

5 Install the pump and torque the pump mounting plate fasteners to 30 ft-lbs / 41 Nm.

6-3
Oil Temperature and Oil Pressure Switches - Deutz Models

The engine oil temperature gauge (optional) is an electrical gauge. The engine oil temperature switch is a normally open switch and has limit contacts that are factory set. The contacts will close at approximately 300°F / 149°C. When the contacts close, the engine will shut off to prevent damage and will not start until the temperature drops below the contact point. Engine oil temperature will be indicated on the gauge (if equipped) when the key is on and the red Emergency Stop Button is pulled out to the on position.

The engine oil pressure gauge (optional) is an electrical gauge. The engine oil pressure switch is a normally open switch and has limit contacts that are factory set. The contacts will close at approximately 7 psi / 0.48 bar. When the contacts open, the engine will shut off to prevent damage. Engine oil pressure will be indicated on the gauge (if equipped) when the engine is running.

How to Remove the Oil Temperature and Oil Pressure Switches

NOTICE Perform this procedure with the engine off.

1 Remove the fasteners from the engine side cover, remove the cover.

2 Tag and disconnect the wiring from the desired switch. Remove the switch from the engine block.

3 Install the new switch and torque to specification.

4 Connect the wires to the new switch.

⚠CAUTION Burn hazard. Contact with hot engine fluids or components may cause severe burns.

NOTICE Always use pipe thread sealant when installing a switch.

Oil temperature switch specifications	
Torque	8-10 ft-lbs 11-14 Nm
Hex size	$^{13}/_{16}$ inch
Temperature switch point	300°F 149°C

Oil pressure switch specifications	
Torque	8-10 ft-lbs 11-14 Nm
Hex size	$1^{1}/_{16}$ inch
Oil pressure switch point	7 psi 0.48 bar

6-4 Coolant Temperature and Oil Pressure Switches - Perkins Models

The engine coolant temperature gauge (optional) is an electrical gauge. The engine coolant temperature switch is a normally open switch and has limit contacts that are factory set. The contacts will close at approximately 221°F / 105°C. When the contacts close, the engine will shut off to prevent damage and will not start until the temperature drops below the contact point. Engine coolant temperature will be indicated on the gauge (if equipped) when the key is on and the red Emergency Stop Button is pulled out to the on position.

The engine oil pressure gauge (optional) is an electrical gauge. The engine oil presure switch is a normally open switch and has limit contacts that are factory set. The contacts will close at approximately 4.2 psi / 0.3 bar. When the contacts open, the engine will shut off to prevent damage. Engine oil pressure will be indicated on the gauge (if equipped) when the engine is running.

How to Remove the Coolant Temperature and Oil Pressure Switches

NOTICE Perform this procedure with the engine off.

1 Tag and disconnect the wiring from the desired switch. Remove the switch from the engine block.

2 Install the new switch and torque to specification.

3 Connect the wires to the new switch.

⚠CAUTION Burn hazard. Contact with hot engine fluids or components may cause severe burns.

NOTICE Always use pipe thread sealant when installing a switch.

Coolant temperature switch unit specifications	
Torque	8-10 ft-lbs 11-14 Nm
Hex size	7/8 inch
Temperature switch point	221°F 105°C

Oil pressure switch specifications	
Torque	8-10 ft-lbs 11-14 Nm
Hex size	7/8 inch
Oil pressure switch point	4.2 psi 0.3 bar

6-5 Coolant Temperature and Oil Pressure Sending Units - GM Models

The engine coolant temperature gauge (optional) is an electrical gauge. The engine ECM monitors the engine coolant temperature and will shut the engine off when the coolant temperature reaches approximately 230°F / 110°C to prevent damage. The engine will not start until the temperature drops below the switch point. Engine coolant temperature will be indicated on the gauge (if equipped) when the key is on and the red Emergency Stop Button is pulled out to the on position.

The engine oil pressure gauge (optional) is an electrical gauge. The engine ECM monitors the engine oil pressure and will shut the engine off when the oil pressure falls below 8 psi / 0.55 bar to prevent damage.

How to Remove the Coolant Temperature and Oil Pressure Sending Units

NOTICE Perform this procedure with the engine off.

1 Tag and disconnect the wiring from the desired sending unit. Remove the sending unit from the engine block.

NOTICE The coolant temperature sending unit is located at the thermostat housing. The oil pressure switch is located on the oil filter side of the engine block near the flywheel end.

2 Install the new sending unit or switch and torque to specification.

3 Connect the wires to the new sending unit or switch.

⚠CAUTION Burn hazard. Contact with hot engine fluids or components may cause severe burns.

NOTICE Always use pipe thread sealant when installing a sending unit or switch.

Coolant temperature sending unit specifications	
Torque	8-10 ft-lbs 11-14 Nm
Hex size	$^{9}/_{16}$ inch
Temperature switch point	230°F 110°C

Oil pressure sending unit specifications	
Torque	8-10 ft-lbs 11-14 Nm
Hex size	$1^{1}/_{16}$ inch
Oil pressure switch point	8 psi 0.55 bar

6-6 Timing Adjustment

NOTICE The ignition timing is controlled by the engine ECM and can only be adjusted by re-programming the engine ECM. If timing adjustment or service is required, please contact Genie Industries Service Department or your local GM dealer.

Ground Controls

REV A

7-1 Control Relays

Relays used for single function switching are single pole double throw (SPDT) relays.

How to Test a Single Pole Double Throw Relay

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

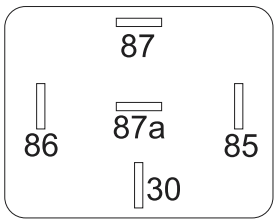
1 Tag and disconnect all the wiring from the relay to be tested.

2 Connect the leads from an ohmmeter or continuity tester to each terminal combination and check for continuity. Terminals 85 and 86 represent the coil and should not be tested in any other combination.

Test	Desired result
terminal 85 to 86 with resistor	75 to 85Ω
terminal 87 to 87a and 30	no continuity (infinite Ω)
terminal 87a to 30	continuity (zero Ω)

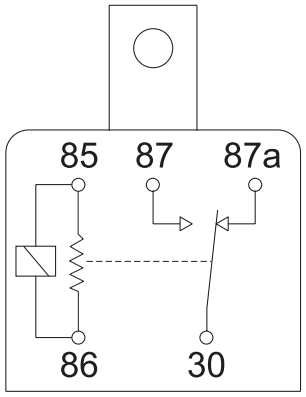
3 Connect 12V DC to terminal 85 and a ground wire to terminal 86, then test the following terminal combinations.

Test	Desired result
terminal 87 to 87a and 30	no continuity (infinite Ω)
terminal 87 to 30	continuity (zero Ω)



terminal no. 87a - N.C.
terminal no. 85 - coil negative (-)
terminal no. 30 - common
terminal no. 86 - coil positive (+)
terminal no. 87 - N.O.

Control Relay Schematic



7-2
Power Relay

⚠WARNING Electrocution hazard. Contact with electrically charged circuits may result in death or serious injury. Remove all rings, watches and other jewelry.

NOTICE The power relay is mounted on the backside of the ground control box.

How to Test the Power Relay

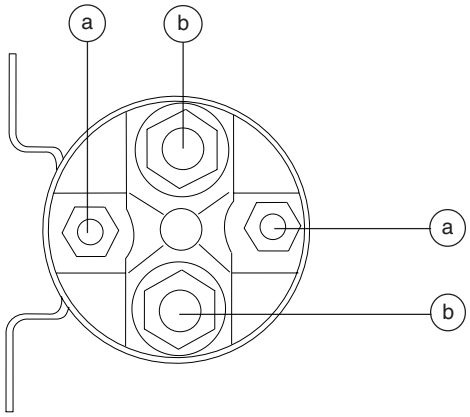
⚠WARNING Electrocution hazard. Disconnect the ground cable from the battery before performing this procedure.

1 Connect the leads from an ohmmeter to each terminal combination and check for continuity.

Test	Desired result
2 small posts	12 to 16Ω
2 large posts	no continuity (infinite Ω)
Any small post to any large post	no continuity (infinite Ω)

2 Connect 12V DC to one of the small posts and a ground wire to the other small post, then test the following terminal combination.

Test	Desired result
2 large posts	continuity (zero Ω)



a solenoid activate coil terminal (small post)

b high amp power contact terminal (large post)

7-3
Toggle Switches

See 1-4, *Toggle Switches*.

7-4
Terminal Strip

How to Remove a Terminal Strip Section

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could cause death or serious injury. Remove all rings, watches and other jewelry.

1 Label the wiring from the terminal strip section to be removed.

2 Use a small flat blade screwdriver to push in and release the wire from the terminal strip.

3 Locate the removal tab on the bottom or top of the terminal strip section.

4 Use a small flat blade screwdriver to gently pry up on the tab of the terminal strip section and remove it.

Hydraulic Pumps

REV A

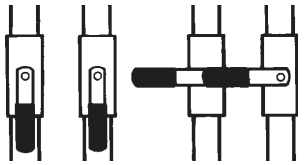
8-1 Function Pump

How to Remove the Function Pump

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 **Models without hydraulic tank shutoff valves:** Remove the drain plug from the hydraulic tank and completely drain the tank into a suitable container. See capacity specifications.

Models with hydraulic tank shutoff valves: Close the two hydraulic tank valves located at the hydraulic tank.



open closed

CAUTION Component damage hazard. The engine must not be started with the hydraulic tank shutoff valves in the closed position or component damage will occur. If the tank valves are closed, remove the key from the key switch and tag the machine to inform personnel of the condition.

2 Tag, disconnect and plug the hydraulic hoses from the function pump. Cap the fittings on the pump.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

3 Remove the pump mounting fasteners. Carefully remove the pump.

CAUTION Component damage hazard. Be sure to open the two hydraulic tank valves (if equipped) and prime the pump after installing the pump. See 8-2, *How to Prime the Pump*.

8-2 Drive Pump

The drive pump is a bi-directional variable displacement piston pump. The pump output is controlled by the electronic displacement controller (EDC), located on the pump. The only adjustment that can be made to the pump is the neutral or null adjustment. Any internal service to the pump should only be performed at an authorized Sundstrand-Sauer service center. Call Genie Industries Service Department to locate your local authorized service center.

How to Remove the Drive Pump

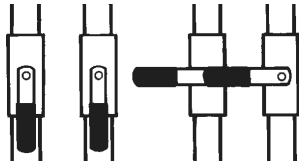
CAUTION Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system and cause severe component damage. Dealer service is recommended.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Disconnect the electrical connection at the electronic displacement controller (EDC) located on the drive pump.

2 **Models without hydraulic tank shutoff valves:** Remove the drain plug from the hydraulic tank and completely drain the tank into a suitable container. See capacity specifications.

Models with hydraulic tank shutoff valves: Close the two hydraulic tank valves located at the hydraulic tank.



open closed

CAUTION Component damage hazard. The engine must not be started with the hydraulic tank shutoff valves in the CLOSED position or component damage will occur. If the tank valves are closed, remove the key from the key switch and tag the machine to inform personnel of the condition.

3 Tag, disconnect and plug the hydraulic hoses from the drive and function pumps. Cap the fittings on the pumps.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

4 Support the pumps with a suitable lifting device and remove the two drive pump mounting fasteners.

5 Carefully pull the drive pump out until the pump coupler separates from the flex plate.

6 Remove the drive pump assembly from the machine.

CAUTION Component damage hazard. Be sure to open the two hydraulic tank valves and prime the pump after installing the pump.

NOTICE Before installing the pump, verify proper pump coupler spacing. Refer to the appropriate flex plate installation instructions for your engine.

How to Prime the Pump

CAUTION Component damage hazard. Be sure that the hydraulic tank shutoff valves (if equipped) are in the open position before priming the pump. The engine must not be started with the hydraulic tank shutoff valves in the closed position or component damage will occur.

1 Connect a 0 to 600 psi / 0 to 41 bar pressure gauge to the diagnostic nipple on the drive pump.

2 **GM models:** Close the valve on the LPG tank, then disconnect the hose from the tank. Move the fuel select toggle switch to the LPG position.
Deutz and Perkins models: Disconnect the engine wiring harness from the fuel solenoid at the injector pump.

3 Crank the engine with the starter motor for 15 seconds, wait 15 seconds, then crank the engine an additional 15 seconds or until the pressure reaches 300 psi / 20.68 bar.

4 **GM models:** Connect the LPG hose to the LPG tank and open the valve on the tank.
Deutz and Perkins models: Connect the engine wiring harness to the fuel solenoid.

5 Start the engine from the ground controls and check for hydraulic leaks.

Manifolds

REV B

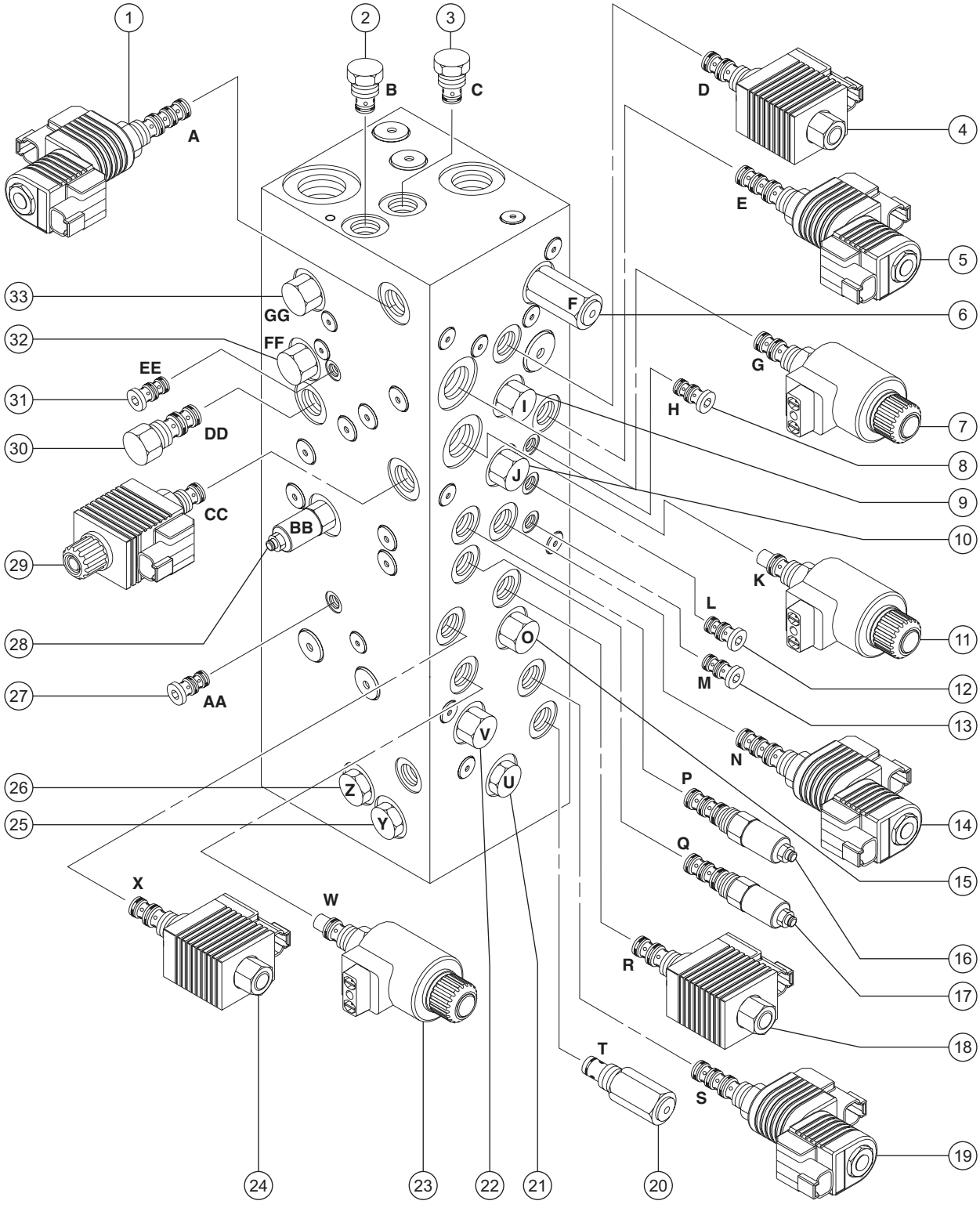
9-1
Function Manifold Components - View 1

The function manifold assembly is located on the tank side tray, behind the ground control box.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 3 position 4 way	A	Platform rotate left/right	25-30 ft-lbs / 34-41 Nm
2	Check valve, 30 psi / 2 bar	B	Platform rotate circuit (prevents hydraulic hoses from draining back to tank)	25-30 ft-lbs / 34-41 Nm
3	Check valve, 30 psi / 2 bar	C	Platform rotate circuit (prevents hydraulic hoses from draining back to tank)	25-30 ft-lbs / 34-41 Nm
4	Solenoid valve, 2 position 3 way	D	Boom retract	10-12 ft-lbs / 14-16 Nm
5	Solenoid valve, 3 position 4 way	E	Turntable rotate left/right	25-30 ft-lbs / 34-41 Nm
6	Relief valve, 2500 psi / 172 bar	F	Boom extend/retract circuit	25-30 ft-lbs / 34-41 Nm
7	Solenoid valve, 2 position 3 way	G	Boom extend	15-18 ft-lbs / 20-24 Nm
8	Check valve	H	Differential sensing circuit, turntable rotate left/right	8-10 ft-lbs / 10-15 Nm
9	Differential sensing valve	I	Boom extend/retract circuit (prevents overflowing the proportional valve)	35-40 ft-lbs / 47-54 Nm
10	Differential sensing valve	J	Turntable rotate left/right circuit (prevents overflowing the proportional valve)	35-40 ft-lbs / 47-54 Nm
11	Proportional solenoid valve	K	Boom extend/retract circuit	35-40 ft-lbs / 47-54 Nm
12	Check valve	L	Differential sensing circuit, platform level down	8-10 ft-lbs / 10-15 Nm
13	Check valve	M	Differential sensing circuit, platform level up	8-10 ft-lbs / 10-15 Nm
14	Solenoid valve, 3 position 4 way	N	Platform level up/down	25-30 ft-lbs / 34-41 Nm
15	Differential sensing valve	O	Boom up/down circuit (prevents overflowing the proportional valve)	35-40 ft-lbs / 47-54 Nm
16	Counterbalance valve	P	Platform level down circuit	35-40 ft-lbs / 47-54 Nm
17	Counterbalance valve	Q	Platform level up circuit	35-40 ft-lbs / 47-54 Nm
18	Solenoid valve, 2 position 3 way	R	Boom down	10-12 ft-lbs / 14-16 Nm
19	Solenoid valve, 3 position 4 way	S	Steer left/right and axle extend/retract	25-30 ft-lbs / 34-41 Nm
20	Relief valve, 2800 psi / 193 bar	T	System relief	25-30 ft-lbs / 34-41 Nm

This list continues. Please turn the page.

REV B MANIFOLDS



Function Manifold Components - View 1, continued

Index No.	Description	Schematic Item	Function	Torque
21	Check valve	U	Blocks flow from auxiliary pump to function pump	35-40 ft-lbs / 47-54 Nm
22	Priority flow regulator valve, 3.5 gpm / 13.2 L/min	V	Steer circuit	35-40 ft-lbs / 47-54 Nm
23	Proportional solenoid valve	W	Boom up/down circuit	35-40 ft-lbs / 47-54 Nm
24	Solenoid valve, 2 position 3 way	X	Boom up	10-12 ft-lbs / 14-16 Nm
25	Check valve	Y	Blocks flow from function pump to auxiliary pump	25-30 ft-lbs / 34-41 Nm
26	Check valve	Z	Hydraulic oil cooler bypass	25-30 ft-lbs / 34-41 Nm
27	Check valve	AA	Boom up/down circuit	8-10 ft-lbs / 10-15 Nm
28	Needle valve	BB	Platform level circuit	35-40 ft-lbs / 47-54 Nm
29	Proportional solenoid valve	CC	Turntable rotate circuit	35-40 ft-lbs / 47-54 Nm
30	Differential sensing valve	DD	Meters flow to functions	35-40 ft-lbs / 47-54 Nm
31	Check valve	EE	Differential sensing circuit, boom extend/retract	8-10 ft-lbs / 10-15 Nm
32	Flow regulator valve, 0.1 gpm / 0.37 L/min	FF	Bleeds off differential sensing valves to tank	25-30 ft-lbs / 34-41 Nm
33	Flow regulator valve, 0.6 gpm / 2.27 L/min	GG	Platform rotate circuit	25-30 ft-lbs / 34-41 Nm

Plug Torque Specifications

Description	Hex size	Torque
SAE No. 4	3/16	13 ft-lbs / 18 Nm
SAE No. 6	1/4	18 ft-lbs / 24 Nm
SAE No. 8	5/16	50 ft-lbs / 68 Nm
SAE No. 10	9/16	55 ft-lbs / 75 Nm

Valve Coil Resistance Specification

Solenoid valve, 3 position 4 way, 10V DC (schematic items A, E, N and S)	6Ω
Solenoid valve, 2 position 3 way, 10V DC (schematic items D, R and X)	6Ω
Solenoid valve, 2 position 3 way, 10V DC (schematic item G)	3.5Ω
Proportional solenoid valve, 12V DC (schematic items K, W and CC)	5Ω

REV B MANIFOLDS